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PAPER-1
TEACHING AND RESEARCH APTITUDE

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NOT FOR SALE

SHOUT
SHARE
IT

Dedicated to My Mother Smt. MANTI DEVI

"सभी पास हो सभी प्रोफेसर बने""

Prepared by

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Teaching Aptitude

TEACHING

- Teaching is a process in which one individual teaches or instruct another individual. Teaching is considered as the act of imparting instructions to the learners in the classroom situation. It is watching systematically.
- Dewey: - considers it as a manipulation of the situation, where the learner will acquire skills and insight with his initiation.

The objective of Teaching-

- Acquisition of knowledge
- Development of Understanding
- Development of Conceptual, intellectual and subject-specific skills
- Development of values values

Levels of teaching (Memory, Understanding and Reflective)

1. Memory level: Thoughtless teaching
2. Understanding level: Thoughtful teaching
3. Reflective level: Upper thoughtful level

1. Memory level of teaching

It is the first and thoughtless level of teaching. It is concerned with memory or mental ability that exists in all living beings. Teaching at memory level is considered to be the lowest level of teaching. At this level,

- The thinking ability does not play any role.
- Students only cram the facts, information, formulas and laws that are taught to them.
- the teaching is nothing but learning the subject matter by rote.[Bigge, Morris L(1967)]
- The role of the teacher is prominent and that of the student is secondary.
- The study material is organized and pre-planned. The teacher presents the study material in a sequential order.
- Memory level teaching lacks insight. Psychologically, it is cognitive level teaching.

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Merits of memory level teaching

1. Useful for children at lower classes. This is because of their intellect us under development and they have a rote memory.
2. The role of the teacher is important in this level of teaching and he is free to make choices of subject matter, plan it and can present it at will.
3. The knowledge acquired at memory level teaching forms a basis for the future i.e. when student's intelligence and thinking is required.
4. Memory level teaching acts as the first step for understanding and reflective levels of teaching. It is pre-requisite for understanding level teaching.

Demerits of memory level teaching

1. This does not contribute to the development of the student's capabilities.
2. Since at this level student learns by rote, the knowledge gained does not prove helpful in real life situations as it does not develops the talents of students.
3. The pupils are kept in strict discipline and cramming is insisted on this teaching.
4. Intelligence does not carry any importance in this type of teaching and it lacks motivation

2. Understanding level

Understanding something is to perceive the meaning, grasp the idea and comprehend the meaning. In the field of Education and Psychology, the meaning of '*understanding*' can be classified as

- seeing the total use of facts
- seeing relationship
- a generalized insight

The teaching at the understanding level is of a higher quality than the one at the memory level. It is more useful and thoughtful from the point of view of mental capabilities. At this level of teaching, the teacher explains the student about the relationship between principles and facts and teaches them how these principles can be applied. Memory level teaching barrier is essential to be crossed for this level of teaching.

Merits of the understanding level of teaching

1. At this level of teaching students to make use of their thinking abilities.
2. Knowledge acquired at this level forms the basis of the reflective level of teaching.
3. Here the teacher presents subject matter before the students in an organized and sequential form. The new knowledge acquired is related to the previously acquired knowledge.

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4. Here the students do not learn by rote. Here they learn by understanding the facts and information and their use and purpose.

Demerits of the understanding level of teaching

1. Teaching at this level is subject centered. There is no interaction between the teacher and students at this level.
2. This type of teaching mastery is emphasized.

3. Reflective level of teaching

This level is also known as introspective level. Reflecting on something means giving careful thought to something over a period of time. It also means thinking deeply about something.

- Reflective level of teaching is considered to be the highest level at which teaching is carried out.
- It is highly thoughtful and useful.
- A student can attain this level only after going through memory level and understanding level.
- Teaching at the reflective level enables the students to solve the real problems of life.
- At this level, the student is made to face a real problematic situation. The student by understanding the situation and using his critical abilities succeeds in solving the problem.

- At this level emphasis is laid on identifying the problem, defining it and finding a solution to it. The student's original thinking and creative-abilities develop at this level.
- The role of the teacher in this level of teaching is democratic. He does not force knowledge on the students but develops in their talents and capabilities.
- The role of the students is quite active.
- Reflective level of teaching is that which is problem-centered and the student is busy in original imagination.

Merits of reflective level teaching

1. The teaching at this level is not teacher-centered or subject-centered, it is leaner-centered.
2. There is an interaction between the teacher and the taught at the reflective level teaching.
3. At this level, teaching is appropriate for the higher class.
4. At this level, teaching is highly thoughtful and useful than the teaching at the memory or understanding level.

Demerits of reflective level teaching

1. Not suitable for small children at the lower level of teaching. It is suitable only for mentally matured children
2. At this level, the study material is neither organized nor pre-planned. Therefore students cannot acquire systematic and organized knowledge of their study courses.

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Characteristics of teaching:-

1. The main character of teaching is to provide guidance and training.
2. Teaching is interaction between teacher and students.
3. Teaching is an art to give knowledge to students with effective way.
4. Teaching is a science to educate fact and causes of different topics of different subjects.
5. Teaching is continues process.
6. Teacher can teach effectively, if he has full confidence on the subject.
7. Teaching encourages students to learn more and more.
8. Teaching is formal as well as informal
9. Teaching is communication of information to students. In teaching, teacher imparts information in interesting way so that students can easily understand the information.
10. Teaching is tool to help student to adjust himself in society and its environment.

BASIC REQUIREMENTS OF TEACHING

- The Teacher
- The Learner
- The Subject (Topic)
- The Environment

Learner's characteristics

Academic

Academic characteristics of learners include the education type, education level and knowledge. In young adolescents, intellectual development is not as visible as physical development, but it is just as intense. During early adolescence, youth exhibit a wide range of individual intellectual development, including meta-cognition and independent thought.

Social

Adolescent social development is often described as the process of establishing a sense of identity and establishing a role and purpose. It is an outward sense of oneself. Body image is a key factor in developing a sense of self and identity, especially for girls, and the family and increasingly peers play an important role assisting and supporting the adolescent to achieve adult roles.

Emotional

The way a person thinks and feels about themselves and others, their inward thoughts, is key to their emotional development. Adolescents shifts moods rapidly and can become rebellious toward adults. They are sensitive to criticism and easily get offended.

Cognitive

Cognition is the process involving thought, rationale and perception. The physical changes of the brain that occur during adolescence follow typical patterns of cognitive development. They are characterized by the development of higher-level cognitive functioning that aligns with the changes in brain structure and function, particularly in the prefrontal cortex region.

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Characteristics of Good Learner:-

- Curious
- Carefully understanding
- Social and personal qualities
- Willingness to learn
- Interests and attitude of learner
- Easily adjustment to change
- Internal motivation
- Learning power
- Nervousness
- Application of mind and creativity
- Social and cultural background

Factors affecting teaching related to: Teacher, Learner, Support material, Instructional facilities, Learning environment and Institution

Teacher

Teacher – Teacher plays an important role in the teaching-learning process as facilitator of learning. By adopting the best teaching techniques and efficient methods a teach could explore the right talent of the learners to help them towards quality learning process.

It depends on the various factors of teacher-

- Educational Qualification
- Skills
- Experience
- Subject matter

Learner

Learner – Learning is most effective when the differences in learner's language, cultural and social behaviors are taken into account, it's necessary to take note of intelligence, ethnic group, race, belief and socioeconomic status of the learners which can influence the teaching in the class room. Every individual is different with others in the terms of physical, social and cultural orientation; these aspects make learner different from one another.

Environment

Environment and other factors

- Support materials
- Instructional facilities
- Learning environment
- Class-room environments
- Socio-economic factor

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- Expectations

- **Institution** – Teacher is abiding by administrative policy of the institution affecting the learning process. There are chances that Teacher want to deliver in a way he loves to do but the institute policy don't allow him to use his own method. This leads to dissatisfaction in teacher causing learning process to slow down.

NCERT (National Council of Educational Research and Training) in its publication Core Teaching

Skills (1982) have laid stress on the following teaching skills.

- Writing instructional objectives
- Organizing the content
- Creating set for introducing the lesson
- Introducing a lesson
- Structuring classroom questions
- Question delivery and its distribution
- Response management
- Explaining
- Illustrating with examples
- Using teaching aids
- Stimulus variation
- Pacing of the lesson
- Promoting pupil participation
- Use of blackboard
- Achieving closure of the lesson
- Giving assignments
- Evaluating the pupil's progress
- Diagnosing pupil learning difficulties and taking remedial measures
- Management of the class

Micro Teaching –

- Micro-teaching is a product of research at Stanford University. It was first adopted in 1961 by Dwight W. Allen and his co-workers. It implies micro-element that systematically attempts to simplify the complexities of the teaching process. Teaching is a complex process. It cannot be mastered in a rigid and general setting. So it is analyzed into well-defined components that can be practiced, taught and evaluated.
- Micro-teaching concentrates on specific teaching behaviors and provides opportunity for practicing teaching under controlled conditions. So through micro-teaching, the behavior of the teacher and pupil is modified and the teaching-learning process is more effective by the skill training.

Teaching Methodology

There are different types of teaching methods which can be categorized into four broad types.

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1. *Teacher-centred methods,*
2. *Learner-centred methods,*
3. *Content-focused methods; and*
4. *Interactive/participative methods.*

#1 Instructor/Teacher Centred Methods

Here the teacher casts himself/herself in the role of being a master of the subject matter. The teacher is looked upon by the learners as an expert or an authority. Learners, on the other hand, are presumed to be passive and copious recipients of knowledge from the teacher.

#2 Learner-Centred Methods

In learner-centred methods, the teacher/instructor is both a teacher and a learner at the same time. In the words of Lawrence Stenhouse, the teacher plays a dual role as a learner as well "so that in his classroom extends rather than constricts his intellectual horizons".

#3 Content-Focused Methods

In this category of methods, both the teacher and the learners have to fit into the content that is taught. Generally, this means the information and skills to be taught are regarded as sacrosanct or very important. A lot of emphases are laid on the clarity and careful analyses of content. Both the teacher and the learners cannot alter or become critical of anything to do with the content.

#4 Interactive/Participative Methods

This fourth category borrows a bit from the three other methods without necessarily laying emphasis unduly on the learner, content or teacher. These methods are driven by the situational analysis of what is the most appropriate thing for us to learn/do now given the situation of learners and the teacher. They require a participatory understanding of varied domains and factors.

THE LECTURE METHOD

A formal or semi-formal discourse in which the instructor presents a series of events, facts, or principles, explores a problem or explains relationships

It creates new ideas. It is good for a large class. Students give their views at the end of the lecture. The teacher is experienced and has mastery on the subject, explain all points and can answer all questions raised by students. Students can ask if they need any clarification.

USES

to orient students.
To introduce a subject.
To give directions on procedures.
To present basic material.
To introduce a demonstration, discussion or performance.
To illustrate the application of rules, principles, or concepts.

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To review, clarifies, emphasize or summarize

ADVANTAGES

Saves time.
Permits flexibility.
requires less rigid space requirement.
Permits adaptability.
Permits versatility.
Permits better centre over contact and sequence.

DISADVANTAGES

Involves one-way communication
Poses problems in skill teaching.
Encourages student passiveness.
Poses difficulty in gauging student reaction.
Require highly skilled instructors.

THE DISCUSSION METHOD

A method in which group discussion techniques are used to reach instructional objectives.

Students listen to other's opinion & express Discuss with teachers the points that were Students learn on their own & find out key ideas. Students exchange their ideas. Students get point of view of all and not on after discussion when students give their ideas teacher corrects their mistakes. Students can make their own notes.

USES

to develop imaginative solutions to problem
To stimulate thinking and interest and to se
To emphasize main teaching points.
To determine how well the student understands concepts and principle
To prepare students for application of the theory of procedure.
To supplement lectures, reading & laboratory exercises.
To summarize, clarify points or review.

ADVANTAGES

Increase student's interest
Increases students' acceptance and commitment
Utilizes student knowledge and experience.
Results in more permanent learning because high degree of student participation.

DISADVANTAGES

Require highly skilled instructor.
requires preparation by the student.

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Limits content.
Consumes time.
restricts the size of groups.

THE PROGRAMMED INSTRUCTION METHOD

A method of self-instruction

- To provide remedial instruction.
- To provide make-up instruction for late arrivals, absentees, or transients.
- To maintain previously learned skills which are not performed frequently enough.
- To provide retraining on equipment and procedures which have become obsolete.
- To upgrade production.
- To accelerate capable students.
- To provide enough common background among students.
- To provide the review and practice of knowledge and skills.

USES/ADVANTAGES

- Reduce failure rate.
- Improves end-of-course proficiency.
- Saves time.
- Provides for self-instruction.

DISADVANTAGES

- Require local or commercial
- Preparation.
- Requires lengthy programmer training.
- Increases expenses.
- Requires considerable lead time.

THE STUDY ASSIGNMENT METHOD

A method in which the instructor assigns reading to books, periodicals, project or research papers or exercises for the practice.

- To orient students to a topic prior to classroom or Laboratory work.
- It enhances the ability of research on any topic as the student's search topic from different books, webs Active learning
- To set the stage for a lecture demonstration or discussion.
- To provide for or capitalize on individual differences in ability, background, or experience through differed
- To provide for the review of material covered in class or to give practice.
- To provide enrichment material.

THE TUTORIAL METHOD

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A method of instruction in which an instructor works directly with an individual student.

- To reach highly complicated skills operations or operations involving danger or expensive equipment.
- To provide individualized remedial assistance

THE SEMINAR METHOD

A tutorial arrangement involving the instructor and groups, rather than instructor

- To provide general guidance for a group working on an advanced study or research project.
- To exchange information on techniques and approaches being explored by members of a study or research group.
- To develop new and imaginative solutions to problems under study by the group.

THE DEMONSTRATION METHOD

A method of instruction where the instructor by actually performing an operation or doing a job shows the students what to do, how to do it, and through explanations brings out why, where, and when it is done.

- To teach manipulative operations or procedures.
- To teach troubleshooting.
- To illustrate principles.
- To teach operation or functioning of equipment.
- To teach teamwork.
- To set standards of workmanship.
- To teach safety procedures

Brainstorming

- More interesting
- More informative
- Gain knowledge
- Learning is effective
- More participation of students
- Students give their opinion
- Active learning
- Creative thinking is encouraged.
- Students think beyond their knowledge.
- Everyone gets the chance to express their thoughts.
- Simple topics can be learnt from different angles.

Roleplay

- Interesting method
- Creative thinking is encouraged.

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- Students think beyond their knowledge.
- Students enjoy the situation
- Active learning
- Easy to learn

Case study

- Active learning
- Creative thinking is encouraged.
- Students think beyond their knowledge.

Swayam, Swayamprabha, MOOCs etc.

(Details on Digital Initiative in Higher Education through NMEICT has been covered in another post)

Study Webs of Active Learning for Young Aspiring Minds (SWAYAM)

SWAYAM is an indigenous (Made in India) IT Massive Open Online Courses (MOOCs) Platform for providing best quality education that can be accessed by anyone, anytime and anywhere using the IT system. The Concept of Massive Open Online Courses (MOOCs) involves online delivery of interactive learning content to large number of people simultaneously. It allows sharing of best quality education with everyone, thereby bringing in equity as far as the quality of education is concerned. SWAYAM platform is developed by Ministry of Human Resource Development (MHRD) and All India Council for Technical Education (AICTE) with the help of Microsoft. It's ultimately capable of hosting 2000 courses and 80000 hours of learning: covering school, undergraduate, post-graduate, engineering, law and other professional courses. All the courses on this platform are interactive, prepared by the best teachers in the country and are available, free of cost to the students in India.

SWAYAM Prabha: the 32 Educational DTH Channels

The SWAYAM PRABHA is a group of 32 DTH channels devoted to telecasting of high-quality educational programmes on 24X7 basis using the GSAT-15 satellite. Every day, there will be new content for at least (4) hours which would be repeated 5 more times in a day, allowing the students to choose the time of their convenience. The channels are uplinked from BISAG, Gandhinagar. The contents are provided by NPTEL, IITs, UGC, CEC, IGNOU, NCERT and NIOS. The INFLIBNET Centre maintains the web portal.

TRADITIONAL TEACHING METHODS AND SUPPORT SYSTEM

Traditional education, also known as back-to- basics, conventional education or customary education, refers to long-established customs that society traditionally used in schools. The back-to-basics traditional education method, also known as 'chalk & talk method' This old fashioned way of teaching was all about the recitation and memorization techniques.

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The traditional role of teaching focuses on the teacher as organizers of learning activity, providers of information and experts of knowledge. The teacher carries too much of responsibility for teaching in the classroom to make sure everything they are teaching is understood by the students. Teacher is also responsible to control class where the teacher teaches using blackboard, explains concepts, asks students to copy and makes sure that students are paying attention This technique of teaching is a one-way Follow of information in which the teacher often continuously talks for an hour or more expecting that when he asks a question, the students will able to reproduce the same thing that he was talking about.

MODERN AND ICT BASED TEACHING METHODS

Gone are the days of blackboard and chalk …it all replaced by LCD Projectors & interactive whiteboards in the classroom. When we talk about the modern or ICT based education system it's include full fledged usages of high tech equipment in the educational institutions. Information and Communication Technology (ICT) in education is the mode of education that uses information and communications technology to support, enhance, and optimize the delivery of information.

Below are few key teaching techniques based on Modern and ICT Based teaching methods.

- Flipped Classroom – It's allowing students to go beyond their normal boundaries and explore the lesson before teacher describes them in class-room.
- Design Thinking & Creative ideas – This involves real life case to increase the curiosity, analytical skills and creativity.
- Mind Maps – Use of self-learning tools
- Gamification – Learn through the play using quizzes and hunt ideas
- Free online Learning Tools
- ICT Based Teaching Methods – Virtual Reality , Virtual Labs , Open educational Resources
- Learning Management system (LMS) & Massive Open Online Courses (MOOCs)

Evaluation system

In any education system evaluation is a critical part. Evaluation basically means the judgment about the student by the teacher, but these judgment is really, really tough. Evaluation is an interwoven activity in the process of teaching and learning. Nowadays evaluation by using the multiple-choice questions type is better than the broad question.

Principles of evaluation

Student evaluation in the teaching-learning processes must be well planned, goal oriented and continuous. One piece of paper cannot evaluate a student's ability. So it is better that evaluation must be done inside the classroom throughout the semester. Following are some rules regarding evaluation.

- The process of evaluation should be informed properly to all the student
- Evaluation must be continuous process.

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- Evaluation should be sensitive to learners and must not be biased.
- At the end of the day evaluation must be reliable judgment to student

Difference between evaluation and assessment

In teaching-learning process. The terms evaluation and assessment are used interchangeably, but there is some inherent difference between these two terms.

Assessment

Assessment is a preliminary phase in the evaluation process. A student can be assessed by using the multiple sources like class test, assignment, presentations, quiz, brainstorming session.

Evaluation

Evaluation is the action in the entire process that allows teachers to make a judgment based on assessment records with reference to learning objectives. Assessment without evaluation has no purpose. Following are the different evaluation techniques.

1. Written test
2. Classroom activities
3. Assignment
4. Project tasks
5. Laboratory activities
6. Social activities

Normally, there are four types of evaluation

1. Criteria referenced evaluation:
2. Formative evaluation
3. Norm referenced evaluation
4. Summative evolution

CHOICE BASED CREDIT SYSTEM IN HIGHER EDUCATION

As already mentioned above, most of the educational institutions follow marks or percentage based evaluation systems which restrict the students to take up the subject or the course of their choice. Our educational system should be flexible that is, the student must get a choice to study his/her course/subject of interest. It can only be possible if the Choice Based Credit

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System (CBCS) are being introduced. The CBCS opens up many opportunities and path for the students to learn and explore not only the subject of their choice but beyond which also develops ones individual self. These courses can further be
Evaluated through grading system, which is considered to be better than the age old marking system. It is better if we introduce and follow the uniform grading system across India which will further help the students to move across institutions within India and across countries.

Teaching Aptitude – MCQ- 8 Questions in Exam

1. Emotional Adjustment of students is effective in-
   (A) Personality formation
   (B) Class-teaching
   (C) Discipline
   (D) All of the above
   Answer (D) All of the above

2. Black-board can be included in which group/category of teaching-aids?
   (A) Audio-aids
   (B) Visual aids
   (C) Audio-visual aids
   (D) None of the above
   Answer :(B) Visual aids

3. Which of the following is related with teaching skill ?
   (A) Black-board writing
   (B) Solving questions
   (C) Asking questions
   (D) All the above
   Answer :(D) All the above

4. Students who ask questions in the class should be-
   (A) Advised to meet the teacher after the class
   (B) Encouraged to participate in the discussion in the class
   (C) Encouraged to continue asking questions

   (D) Encouraged to search answers independently

   Answer :(C) Encouraged to continue asking questions

5. Which of the following set of statements best describes the nature and objectives of teaching ?
   Indicate your answer by selecting from the code.
(a) Teaching and learning are integrally

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(b) There is no difference between teaching and training.
(c) Concern of all teaching is to ensure some kind of transformation in students.
(d) All good teaching is formal in nature.
(e) A teacher is a senior person.
(f) Teaching is a social act whereas learning is a personal act.
Code :
(1) (a), (b) and (d)
(2) (b), (c) and (e)
(3) (a), (c) and (f)
(4) (d), (e) and (f)
Answer: (3)

6. Which of the following learner characteristics is highly related to effectiveness of teaching ?
(1) Prior experience of the learner
(2) Educational status of the parents of the learner
(3) Peer groups of the learner
(4) Family size from which the learner comes.
Answer: (1)

7. In the two sets given below Set – I indicates methods of teaching while Set – II provides the basic requirements for success/effectiveness. Match the two sets and indicate your answer by choosing from the code :

Set – I (Method of teaching)	Set – II (Basic requirements for success/effectiveness)
(a) Lecturing	(i) Small step presentation with feedback provided
(b) Discussion in groups	(ii) Production of large number of ideas
(c) Brainstorming	(iii) Content delivery in a lucid language
(d) Programmed Instructional Procedure	(iv) Use of teaching-aids
	(v) Theme based interaction among participants

Code :
(a) (b) (c) (d)
(1) (i) (ii) (iii) (iv)
(2) (ii) (iii) (iv) (v)
(3) (iii) (v) (ii) (i)
(4) (iv) (ii) (i) (iii)
Answer: (3)

8. At authoritarian level teaching is ……
(A) Teacher centered
(B) Child—centered
(C) Headmaster centered
(D) Experience based

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Answer :(A) Teacher centered

9. Who developed the interaction analysis category system in education for increasing the teacher effectiveness
   (A) Flander
   (B) Rayon
   (C) Amidon and Simon
   (D) Richard Over
   Answer :(A) Flander

10. One of the important theory of moral development has been proposed by——
    (A) Laurence Kohlberg
    (B) Erik Fromm
    (C) Daniel Coleman
    (D) Benjamin Bloom
    Answer :(A) Laurence Kohlberg

11. Character is developed by-
    (A) Will-power
    (B) Conduct and behavior
    (C) Morality
    (D) All of the above
    Answer :(D) All of the above

12. Which of the following is not a level of teaching learning ?
    (A) Differentiation level
    (B) Memory level
    (C) Reflective level
    (D) Understanding level
    Answer :(A) Differentiation level

13. NUEPA is mainly concerned with-

    (A) Educational Supervision
    (B) Educational Unity
    (C) Educational Planning
    (D) Educational Evaluation
    Answer :(C) Educational Planning

14. The name of Yashpal Committee Report (1993) is-
    (A) I.C.T. in Teacher education
    (B) Learning without Burden
    (C) Learning through Broad- casting

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(D) None of the above
Answer :(B) Learning without Burden

15. The Father of Psychoanalysis is-
(A) Erik H. Erikson
(B)]ean Piaget
(C) Jerorne S. Bruner
(D) Sigmund Freud
Answer :(D) Sigmund Freud

16. In pedagogy computer is used-
(A) To motivate the learner
(B) To provide feedback
(C) To interact with the learner
(D) For all the above
Answer :(D) For all the above

17. Which of the following is die brain of the computer ?
(A) Programme
(B) Central processing unit
(C) Memory
(D) Hard Disc
Answer :(B) Central processing unit

18. Spare the rod —- spoil the child.
This assumption is related to that type of discipline which has been advocated-
(A) By naturalist philosophy
(B) By pragmatist philosophy
(C) In Victorian Era
(D) In Democratic Era
Answer :(C) In Victorian Era

19. The concept of school complex was first executed in-

(A) Uttar Pradesh
(B) Madhya Pradesh
(C) Bihar
(D) Rajasthan
Answer :(D) Rajasthan

20. The proponent of the Cognitive Theory of teaching is-
(A) N. L. Gage
(B) Shiv Kumar Mitra
(C) B. F. Skiner

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(D) McDonald
Answer :(A) N. L. Gage

21. Instruction medium affects the absence and escape from class teaching-
(A) Agreed
(B) Indianite
(C) Disagreed
(D) None of the above
Answer :(A) Agreed

22. The determinant of teaching skill training is-
(A) Components
(B) Pupil-teacher
(C) Supervisor
(D) Headmaster
Answer :(A) Components

23. For a good communication ..,…… is required.
(A) Clarity of thought
(B) Dramatic Presentation
(C) Speaking in a mild tone
(D) Speaking without pause
Answer :(Clarity of thought

24. Which of the following is an approach to educational planning ? .
(A) Man-power approach
(B) Social Demand approach
(C) Both (A) and (B)
(D) None of the above
Answer :(C) Both (A) and (B)

25. Institutional planning should be based on-
(A) Aim and needs
(B) Time—table
(C) Administration
(D) Need
Answer :(A) Aim and needs

26. From the list of evaluation procedures given below identify those which will be called 'formative evaluation'. Indicate your answer by choosing from the code :
(a) A teacher awards grades to students after having transacted the course work.
(b) During interaction with students in the classroom, the teacher provides corrective feedback.

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(c) The teacher gives marks to students on a unit test.
(d) The teacher clarifies the doubts of students in the class itself.
(e) The overall performance of a students is reported to parents at every three months interval.
(f) The learner's motivation is raised by the teacher through a question-answer session.
Code :
(1) (a), (b) and (c)
(2) (b), (c) and (d)
(3) (a), (c) and (e)
(4) (b), (d) and (f)
Answer: (4)

27. Assertion (A) : All teaching should aim at ensuring learning.
Reason (R) : All learning results from teaching.
Choose the correct answer from the following code :
(1) Both (A) and (R) are true, and (R) is the correct explanation of (A).
(2) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
(3) (A) is true, but (R) is false.
(4) (A) is false, but (R) is true.
Answer: (3)

28. Teacher behaviour ought to be-
(A) Administrative
(B) Instructive
(C) Idealistic
(D) Directive
Answer :(C) Idealistic

29. Information highway or net is-
(A) Computer
(B) Internet
(C) Intranet
(D) Key-board
Answer :(B) Internet

30. INSAT—1(B) has been launched in-
(A) 30 April, 1983
(B) 30 August, 1983
(C) 30 December, 1983
(D) 30 January, 1984
Answer :(B) 30 August, 1983

31. Computer language is based on-—

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(A) Number system
(B) Symbol system
(C) Series system
(D) None of the above
Answer :(A) Number system

32. The main task of educational computer is-
(A) Scoring the answers
(B) Preserve the information
(C) Analysis of data
(D) All of the above

Answer:- (D)

33. UNESCO satellite directed television program was used first
(A) 1926
(B) 1959
(C) 1961
(D) 1965
Answer :(D) 1965

34. In which of the following instructional procedure is the main component ?
(A) Synaptic teaching model
(B) Basic teaching model
(C) Inductive model
(D) Social-stimulation
Answer :(B) Basic teaching model

35. The computer based teaching model has been developed by-
(A) Gilbert (1962)
(B) Stolurow and Davis (1965)
(C) Robert Gagne (1965)
(D) Mecner (1965)
Answer :(B) Stolurow and Davis (1965)

36. Which of the following expectation students have from group learning ?
(A) To get appreciation from the group
(B) To distribute the work equally
(C) To ignore individual view point
(D) To attract isolated student towards the group
Answer :(D) To attract isolated student towards the group

37. In order to modify the undesirable behaviour of a student the most effective method is-
(A) To punish the student

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(B) To bring it to the notice of parents
(C) To find out the reasons for the undesirable behaviour and provide remedies
(D) To ignore it
Answer :(C)

38. In which university the micro-teaching system started in 1961 ?
(A) Stanford University
(B) Oxford University
(C) Delhi University
(D) M. S. University Baroda(India)
Answer :(A) Stanford University

39. The correct meaning of C.A.I. is-
(A) Characteristics of Assistant Instructor
(B) Computer Assisted Instruction
(C) Community Assisted Instruction
(D) None of the above
Answer :(B) Computer Assisted Instruction

40. "Man is born free but every-where he is in chains/' This statement has been given by-
(A) Abraham Maslow
(B) Jean Jacques Rousseau
(C) John Dewey
(D) W. I-I. Kilpatrick
Answer :(B) Jean Jacques Rousseau

41. Written communication strategy includes-
(A) Algorithms
(B) Decision Table
(C) Both (A) and (B)
(D) None of the above
Answer :(C) Both (A) and (B)

42. Main responsibility of School Management lies on-
(A) Principal
(B) Teachers
(C) Manager
(D) All of the above
Answer :(A) Principal

43. Major objective of School Discipline is-
(A) To ensure safety of staff and students
(B) To create an environment conducive for teaching
(C) Both (A) and (B)

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(D) None of the above
Answer :(C) Both (A) and (B)

44. At primary level teacher-taught ratio was 1 : 39-
(A) According to sixth educational survey of all India
(B) According to fifth educational survey of all India
(C) According to fourth educational survey of all India
(D) According to second educational survey of all India
Answer :(A)

45. A fault in a computer programme which prevents it from working correctly is known as-
(A) Bug
(B) Error
(C) Boo~Boo
(D) Virus
Answer :(A) Bug

46. Practical knowledge of language is learnt at—
(A) School
(B) Language laboratory
(C) Language teaching
(D) Language instruction
Answer :(B) Language laboratory

47. Dropping out from school means-
(A) To come to school casually
(B) To leave the school forever
(C) To play truant from class
(D) None of the above
Answer :(B) To leave the school forever

48. Which one of the following is not a principle of a good time table ?
(A) Flexibility
(B) Ruthless master
(C) Variety
(D) Coordination of efforts
Answer :(B) Ruthless master

49. The reason of absence and escape from school is—
(A) Lack of interest in syllabus
(B) Poor method of teaching
(C) Ineffective teacher
(D) All the above
Answer :(D) All the above

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50. Ministry of Human Resource Development was established on-
(A) Oct. 26, 1985
(B) Sept. 16, 1985
(C) Sept. 26, 1985
(D) Sept. 10, 1986
Answer :(C) Sept. 26, 1985

51. The scope of Decision-Making is—
(A) Management

(B) Organization
(C) Administration
(D) Supervision
Answer :(C) Administration

52. Factor of personality is—
(A) Ductless glands
(B) Family background
(C) School
(D) All the above
Answer :(D) All the above

53. Which of the following aspects is discussed in a Teacher's Diary ?
(A) Class Time Table
(B) Teaching Content
(C) Both (A) and (B)
(D) None of the above
Answer :(C) Both (A) and (B)

54. 10 + 2 + 3 system of education was recommended by—
(A) Kothari Commission
(B) Mudaliar Commission
(C) Radhakrishnan Commission
(D) National Policy on Education (1986)
Answer : (A) Kothari Commission

55. ……. refers to states within a person or animal that drive behaviour towards some goal.
(A) Competence
(B) Affiliation
(C) Motivation
(D) Self-actualization
Answer : (C) Motivation

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56. Psychologists who diagnose learning problems and try to remedy them are called …… Psychologists.
    (A) Social
    (B) Community
    (C) School
    (D) Clinical
    Answer : (C) School

57. A child with average potential intelligence but fertile environment will achieve—
    (A) A better life
    (B) An average life
    (C) Nothing in life
    (D) Everything in life
    Answer : (A) A better life

58. Siblings, parents and teachers are important source of …….. for the children.
    (A) Motivation
    (B) Information
    (C) Opinions
    (D) Attitudes
    Answer : (A) Motivation

59. A good understanding of ……. makes us know about ourselves better.
    (A) Education
    (B) Colours
    (C) Social perception
    (D) None of the rest
    Answer :(A) Education

60. Good tests of a psychological nature bear the following features—
    (A) Reliability
    (B) Cheaper
    (C) Guessing Power
    (D) Rote learning
    Answer : Reliability

61. Mental Health is—
    (A) Harmonious functioning of the total personality
    (B) Symptoms of maladjustment
    (C) Terrible excitement
    (D) Throwing up temper-tantrums
    Answer : (A) Harmonious functioning of the total personality

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62. During the …….. children are faced with a problem of coping with school.

(A) Toddlerhood
(B) Pro-social period
(C) Preschool period
(D) Middle childhood
Answer : (C) Preschool period

63. The best way to memorize is—
(A) Study for long time
(B) To understand the concept
(C) To read loudly
(D) To write the concept
Answer : (B) To understand the concept

64. Students like that teacher who—
(A) Has attractive personality
(B) Belongs to his/her caste
(C) Awards goods work liberally
(D) Has very good knowledge of his/her subject
Answer : (D) Has very good knowledge of his/her subject

65. With the development of technology, the role of teacher in future will be—
(A) To provide information
(B) To develop new text-books
(C) To guide students
(D) To use internet in teaching
Answer : (C) To guide students

66. To prepare students as good citizen, a teacher should—
(A) Maintain strict discipline
(B) Provide good leadership
(C) Be good orator
(D) Have good general knowledge
Answer : (B) Provide good leadership

67. Students should be given home-work to—
(A) Study at home
(B) Check their progress by teachers
(C) Keep them busy
(D) develop habit of self-study
Answer : (D) develop habit of self-study

68. It is necessary for the development of school—

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(A) Principal and teacher
(B) Students
(C) Good building
(D) Other facilities
Answer :(B) Students

69. If a student comes late in class, then you—
(A) Will ignore him
(B) Will not allow him to sit in class
(C) Will punish him
(D) Will allow him to sit silently
Answer : (D) Will allow him to sit silently

70. The purpose of National Education Policy is—
(A) Universalisation of primary education
(B) Vocationalisation of education
(C) To review the education
(D) To give equal opportunity of education to all
Answer :(C) To review the education

71. A teacher learns most by—
(A) His students
(B) His colleagues
(C) His Principal
(D) His experiences during training
Answer :(D) His experiences during training

72. On first day in a class you will—
(A) Start teaching from first chapter
(B) Take introduction of students and introduce yourself
(C) Explain the syllabus
(D) Explain the rules of school and your teaching way
Answer : (B) Take introduction of students and introduce yourself

73. The standard of education can be raised by—
(A) Appointing good teachers
(B) Providing physical facilities in schools
(C) Reforming examination system
(D) Providing computer in schools
Answer : (A) Appointing good teachers

74. The purpose of establishing Navodaya Schools is—
(A) To complete 'Sarva Shiksha Abhiyan' in rural areas

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(B) To provide good education in rural areas
(C) Check wastage of education in rural areas
(D) To increase number of schools in rural areas
Answer : (B) To provide good education in rural areas

75. During teaching, a teacher gives example—
(A) To attract student's attention
(B) To make lesson interesting
(C) To explain the lesson
(D) To continue the lesson for long time
Answer : (C) To explain the lesson

76. If students are not taking interest in your teaching, then you will—
(A) Ignore them
(B) Leave the class
(C) Ask them to pay attention
(D) Change the teaching method
Answer : (D) Change the teaching method

77. According to you, the aim of education should be—
(A) To provide knowledge
(B) To develop personality
(C) To make good citizen
(D) To reform the society
Answer :(B) To develop personality

QUESTION BASED ON UGC NET EXAM

1. Which of the following set of statements best represents the nature and objective of teaching and learning ?

(a) Teaching is like selling and learning is like buying.
(b) Teaching is a social act while learning is a personal act.
(c) Teaching implies learning whereas learning does not imply teaching.
(d) Teaching is a kind of delivery of knowledge while learning is like receiving it.
(e) Teaching is an interaction and is triadic in nature whereas learning is an active engagement in a subject domain.
Code :
(1) (a), (d) and (e)

(2) (b), (c) and (e)
(3) (a), (b) and (c)
(4) (a), (b) and (d)
Answer: (1)

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2. From the list given below identify the learner characteristics which would facilitate teaching learning system to become effective. Choose the correct code to indicate your answer.
   (a) Prior experience of learner (b) Learner's family lineage
   (c) Aptitude of the learner (d) Learner's stage of development
   (e) Learner's food habits and hobbies (f) Learner's religious affiliation
   Code :
   (1) (a), (c) and (d)
   (2) (d), (e) and (f)
   (3) (a), (d) and (e)
   (4) (b), (c) and (f)
   Answer: (1)

3. Assertion (A) : All teaching implies learning.
   Reason (R) : Learning to be useful must be derived from teaching.
   Choose the correct answer from the following :
   (1) Both (A) and (R) are true and (R) is the correct explanation of (A).
   (2) Both (A) and (R) are true but (R) is not the correct explanation of (A).
   (3) (A) is true, but (R) is false.
   (4) (A) is false, but (R) is true.
   Answer: (1)

4. On the basis of summative tests, a teacher is interpreting his/her students, performance in terms of their wellness life style evident in behaviour. This will be called :
   (1) Formative testing
   (2) Continuous and comprehensive evaluation
   (3) Norm – referenced testing
   (4) Criterion – referenced testing
   Answer: (4)

5. Which one of the following is a key behaviour in effective teaching ?
   (1) Using student ideas and contribution
   (2) Structuring
   (3) Instructional variety
   (4) Questioning

   Answer: (3)
6. Which of the following set of statements represents acceptable propositions in respect of teaching-learning relationships ? Choose the correct code to indicate your answer.
   (i) When students fail in a test, it is the teacher who fails.
   (ii) Every teaching must aim at ensuring learning.
   (iii) There can be teaching without learning taking place.
   (iv) There can be no learning without teaching.
   (v) A teacher teaches but learns also.

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(vi) Real learning implies rote learning.
Codes :
(1) (ii), (iii), (iv) and (v)
(2) (i), (ii), (iii) and (v)
(3) (iii), (iv), (v) and (vi)
(4) (i), (ii), (v) and (vi)
Answer: (2)

7. Assertion (A) : Learning is a lifelong process.
Reason (R) : Learning to be useful must be linked with life processes.
Choose the correct answer from the following code :
(1) Both (A) and (R) are true and (R) is the correct explanation of (A).
(2) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
(3) (A) is true, but (R) is false.
(4) (A) is false, but (R) is true.
Answer: (2)

8. Effectiveness of teaching has to be judged in terms of
(1) Course coverage
(2) Students' interest
(3) Learning outcomes of students
(4) Use of teaching aids in the classroom
Answer: (3)
9. In which teaching method learner's participation is made optimal and proactive ?
(1) Discussion method
(2) Buzz session method
(3) Brainstorming session method
(4) Project method
Answer: (1)

10. One of the most powerful factors affecting teaching effectiveness is related to the
(1) Social system of the country
(2) Economic status of the society
(3) Prevailing political system
(4) Educational system
Answer: (4)

11. Assertion (A) : Formative evaluation tends to accelerate the pace of learning.
Reason (R) : As against summative evaluation, formative evaluation is highly reliable.
Choose the correct answer from the following code :
(1) Both (A) and (R) are true and (R) is the correct explanation of (A).
(2) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
(3) (A) is true, but (R) is false.

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(4) (A) is false, but (R) is true.

Answer: (3)

12. The best way for providing value education is through
    (A) discussions on scriptural texts
    (B) lecture/discourses on values
    (C) seminars/symposia on values
    (D) mentoring/reflective sessions on values
    Answer: (B)

13. A college level assistant professor has planned his/her lectures with intent to develop cognitive dimensions of students centered on skills of analysis and synthesis. Below, given are two sets of items

Set – I consisting of levels of cognitive interchange and Set – II comprising basic requirements for promoting them. Match the two sets and indicate your answer by choosing the correct alternative from the code:

Set – I (Levels of Cognitive interchange)	Set – II (Basic requirements for promoting cognitive interchange)
a. Memory level	i. Giving opportunity for discriminating examples and non-examples of a point.
b. Understanding level	ii. Recording the important points made during the presentations.
c. Reflective level	iii. Asking the students to discuss various items of information.
	iv. Critically analyzing the points to be made and discussed.

Codes:

	a	b	c
(A)	ii	iv	i
(B)	iii	iv	ii
(C)	ii	i	iv
(D)	i	ii	iii

Answer: (C)

14. Match the items of the first set with that of the second set in respect of evaluation system. Choose the correct code:

Set – I	Set – II
a. Formative evaluation	i. Evaluating cognitive and co-cognitive aspects with regularity
b. Summative evaluation	ii. Tests and their interpretations based on a group and certain yardsticks
c. Continuous and comprehensive	iii. Grading the final learning outcomes evaluation
d. Norm and criterion referenced	iv. Quizzes and discussions tests

Codes:

	a	b	c	d
(A)	iv	iii	i	ii
(B)	i	ii	iii	iv
(C)	iii	iv	ii	i

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(D) i iii iv ii

Answer: (A)

15. Select the alternative which consists of positive factors contributing to effectiveness of teaching:

List of factors:

(a) Teacher's knowledge of the subject.
(b) Teacher's socio-economic background.
(c) Communication skill of the teacher.
(d) Teacher's ability to please the students.
(e) Teacher's personal contact with students.
(f) Teacher's competence in managing and monitoring the classroom transactions.

Codes:

(A) (b), (c) and (d)
(B) (c), (d) and (f)
(C) (b), (d) and (e)
(D) (a), (c) and (f)

Answer: (D)

16. The use of teaching aids is justified on the grounds of
(A) Attracting student's attention in the class room.
(B) Minimizing indiscipline problems in the classroom.
(C) Optimizing learning outcomes of students.
(D) Effective engagement of students in learning tasks.

Answer- (B)

17. Assertion (A): The purpose of higher education is to promote critical and creative thinking abilities among students.
Reason (R): These abilities ensure job placements.
Choose the correct answer from the following code:
(A) Both (A) and (R) are true and (R) is the correct explanation of (A).
(B) Both (A) and (R) are true but (R) is not the correct explanation of (A).
(C) (A) is true and (R) is false.
(D) (A) is false and (R) is true.

Answer: (C)

18. As a teacher, select the best option to ensure your effective presence in the classroom.
(A) Use of peer command
(B) Making aggressive statements
(C) Adoption of well-established posture
(D) Being authoritarian

Answer: (C)

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19. Imagine you are working in an educational institution where people are of equal status. Which method of communication is best suited and normally employed in such a context?
    (A) Horizontal communication
    (B) Vertical communication
    (C) Corporate communication
    (D) Cross communication
    Answer: (A)

20. Identify the important element a teacher has to take cognizance of while addressing students in a classroom.
    (A) Avoidance of proximity
    (B) Voice modulation
    (C) Repetitive pause
    (D) Fixed posture
    Answer: (B)

21. Greater the handicap of the students coming to the educational institutions, greater the demand on the:
    (A) Family
    (B) Society
    (C) Teacher
    (D) State
    Answer: (C)

22. What are the characteristics of Continuous and Comprehensive Evaluation?
    (a) It increases the workload on students by taking multiple tests.
    (b) It replaces marks with grades.
    (c) It evaluates every aspect of the student.
    (d) It helps in reducing examination phobia.
    Select the correct answer from the codes given below:
    (A) (a), (b), (c) and (d)
    (B) (b) and (d)
    (C) (a), (b) and (c)
    (D) (b), (c) and (d)
    Answer: (D)

23. Which of the following attributes denote great strengths of a teacher?
    (a) Full-time active involvement in the institutional management
    (b) Setting examples
    (c) Willingness to put assumptions to the test
    (d) Acknowledging mistakes
    Select the correct answer from the codes given below:

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(A) (a), (b) and (d)
(B) (b), (c) and (d)
(C) (a), (c) and (d)
(D) (a), (b), (c) and (d)
Answer: (B)

24. Which one of the following statements is correct in the context of multiple – choice type questions?
(A) They are more objective than true-false type questions.
(B) They are less objective than essay type questions.
(C) They are more subjective than short-answer type questions.
(D) They are more subjective than true-false type questions.
Answer: (A)
25. As Chairman of an independent commission on education, Jacques Delors report to UNESCO was titled
(A) International Commission on Education Report
(B) Millennium Development Report
(C) Learning : The Treasure Within
(D) World Declaration on Education for All
Answer: (C)

26. What are required for good teaching?
(a) Diagnosis
(b) Remedy
(c) Direction
(d) Feedback
Select the correct answer from the codes given below:
(A) (a), (b), (c) and (d)
(B) (a) and (b)
(C) (b), (c) and (d)
(D) (c) and (d)
Answer: (A)

27. The main objectives of student evaluation of teachers are:
(a) To gather information about student weaknesses.
(b) To make teachers take teaching seriously.
(c) To help teachers adopt innovative methods of teaching.
(d) To identify the areas of further improvement in teacher traits.
Identify the correct answer from the codes given below:
(A) (a) and (b) only
(B) (b), (c) and (d) only
(C) (a), (b) and (c) only
(D) (a) only

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Answer: (B)

28. Using the central point of the classroom communication as the beginning of a dynamic pattern of ideas is referred to as:
    (A) Systemisation
    (B) Problem – orientation
    (C) Idea protocol
    (D) Mind mapping

    Answer: (D)

29. Attitudes, actions and appearances in the context of classroom communication are considered as:
    (A) Verbal
    (B) Non-verbal
    (C) Impersonal
    (D) Irrational
    Answer: (B)

30. Most often, the teacher – student communication is:
    (A) Spurious
    (B) Critical
    (C) Utilitarian
    (D) Confrontational
    Answer: (C)

31. In a classroom, a communicator's trust level is determined by:
    (A) the use of hyperbole
    (B) the change of voice level
    (C) the use of abstract concepts
    (D) eye contact
    Answer: (D)

32. Which of the following is the highest level of cognitive ability
    (A) Knowing
    (B) Understanding
    (C) Analyzing
    (D) Evaluating
    Answer: (D)

33. Which of the following factors does not impact teaching
    (A) Class room activities that encourage learning
    (B) Socio-economic background of teachers and students
    (C) Learning through experience

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(D) Teacher's Knowledge
Answer: (B)

34. Which of the following statements about teaching aids are correct
a) They help in retaining concepts for longer duration
b) They help students learn better
c) They make teaching learning process interesting
d) They enhance rote learning
(A) (a), (b), (c) and (d)
(B) (a), (b) and (c)
(C) (b), (c) and (d)
(D) (a), (b) and (d)
Answer: (B)

35. Techniques used by a teacher to teach include
a) Lecture
b) Interactive lecture
c) Group work
d) Self study
(A) (a), (b) and (c)
(B) (a), (b), (c) and (d)
(C) (b), (c) and (d)
(D) (a), (b) and (d)
Answer: (B)

36. Achievement tests are commonly used for the purpose of
(A) Making selections for a specific job
(B) Selecting candidates for a course
(C) Identifying strengths and weaknesses of learners
(D) Assessing the amount of learning after teaching
Answer: (D)

37. A good teacher is one who
(A) gives useful information
(B) explains concepts and principles
(C) gives printed notes to students
(D) inspires students to learn
Answer: (D)

38. Maximum participation of students during teaching is possible through
(A) Lecture method
(B) Demonstration method
(C) Inductive method

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(D) Textbook method
Answer: (C)

39. Diagnostic evaluation ascertains
(A) Students performance at the beginning of instructions.
(B) Learning progress and failures during instructions.
(C) Degree of achievements of instructions at the end.
(D) Causes and remedies of persistent learning problems during instructions.
Answer: (D)

40. Instructional aides are used by the teacher to
(A) Glorify the class
(B) Attract the students
(C) Clarify the concepts
(D) Ensure discipline
Answer: (C)

41. Attitude of the teacher that affects teaching pertains to
(A) Affective domain
(B) Cognitive domain
(C) Connective domain
(D) Psychomotor domain
Answer: (A)

42. "Education is the manifestation of perfection already in man" was stated by
(A) M. K. Gandhi
(B) R. N. Tagore
(C) Swami Vivekanand
(D) Sri Aurobindo
Answer- (C)

43. Which of the following is not a prescribed level of teaching?
(A) Memory
(B) Understanding
(C) Reflective
(D) Differentiation
Answer: (D)

44. In the classroom, the teacher sends the message either as words or images. The students are really
(A) Encoders
(B) Decoders
(C) Agitators

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(D) Propagators
Answer: (B)

45. A smart classroom is a teaching space which has
(i) Smart portion with a touch panel control system.
(ii) PC/Laptop connection and DVD/VCR player.
(iii) Document camera and specialized software
(iv) Projector and screen
Select the correct answer from the codes given below:
(A) (i) and (ii) only
(B) (ii) and (iv) only
(C) (i), (ii) and (iii) only
(D) (i), (ii), (iii) and (iv)
Answer: (D)

46. Which one of the following is considered a sign of motivated teaching?
(A) Students asking questions
(B) Maximum attendance of the students
(C) Pin drop silence in the classroom
(D) Students taking notes
Answer: (A)

47. Which one of the following is the best method of teaching?
(A) Lecture
(B) Discussion
(C) Demonstration
(D) Narration
Answer: (C)

48. Dyslexia is associated with
(A) Mental disorder
(B) behavioural disorder
(C) reading disorder
(D) writing disorder
Answer: (C)

49. The e-content generation for undergraduate courses has been assigned by the Ministry of Human Resource Development to
(A) INFLIBNET
(B) Consortium for Educational Communication
(C) National Knowledge Commission
(D) Indira Gandhi National Open University
Answer: (B)

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50. Classroom communication is normally considered as
    (A) effective
    (B) cognitive
    (C) affective
    (D) selective
    Answer: (C)

51. Who among the following propounded the concept of paradigm?
    (A) Peter Haggett
    (B) Von Thunen
    (C) Thomas Kuhn
    (D) John K. Wright
    Answer: (C)

52. While delivering lecture if there is some disturbance in the class, a teacher should
    (A) keep quiet for a while and then continue.
    (B) punish those causing disturbance
    (C) motivate to teach those causing disturbance
    (D) not bother of what is happening in the class
    Answer: (C)

53. Effective teaching is a function of
    (A) Teacher's satisfaction.
    (B) Teacher's honesty and commitment
    (C) Teacher's making students learn and understand
    (D) Teacher's liking for professional excellence.
    Answer: (C)

54. The most appropriate meaning of learning is
    (A) Acquisition of skills
    (B) Modification of behaviour
    (C) Personal adjustment
    (D) Inculcation of knowledge
    Answer: (B)

55. Arrange the following teaching process in order:
    (i) Relate the Present knowledge with Previous one
    (ii) Evaluation
    (iii) Reteaching
    (iv) Formulating instructional objectives
    (v) Presentation of instructional materials
    (A) (i), (ii), (iii), (iv), (v)

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(B) (ii), (i), (iii), (iv), (v)
(C) (v), (iv), (iii), (i), (ii)
(D) (iv), (i), (v), (ii), (iii)
Answer: (D)

56. CIET stands for
(A) Centre for Integrated Education and Technology
(B) Central Institute for Engineering and Technology
(C) Central Institute for Education Technology
(D) Central for integrated techniques
Answer: (C)

57. 6. Teacher's role at higher education
(A) provide information to students.
(B) promote self learning in students.
(C) encourage healthy competition among students.
(D) help students to solve their problems.
Answer: (B)

58. The Verstehen School of Understanding was popularised by
(A) German Social scientists
(B) American philosophers
(C) British Academicians
(D) Italian political Analysts
Answer: (A)

59. A good teacher must be
(A) resourceful and autocratic
(B) resourceful and participative
(C) resourceful and authoritative
(D) resourceful and dominant
Answer: (B)

60. Which one of the following is the best method of teaching?
(A) Lecture method
(B) Discussion method
(C) Demonstration method
(D) Question-Answer method
Answer: (C)

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Research Methodology

- Research is a logical and systematic search for new and useful information on a particular topic.
- It is a discovery of hidden truths.
- Research can lead to new contributions to existing knowledge.
- Research is indeed civilization and determines the economic, social and political development of a nation.

Objectives of Research

- to discover new facts
- to verify and test important facts
- to analyses an event or process or phenomenon to identify the cause and effect relationship to develop new scientific tools, concepts and theories to solve and understand scientific and non scientific problems
- to find solutions to scientific, non scientific and social problems and
- To overcome or solve the problems occurring in our everyday life.

According to Redman and Mory (1923), research is a "systematized effort to gain new knowledge". In simple terms research refers to a search for knowledge. It is a scientific and systematic search for information on a particular topic or issue. It is also known as the art of scientific investigation.

Essential elements of any research:-

- **Empirical:** Research is based on direct experience or observation by the researcher.
- **Logical:** Research must be based on valid procedures and principles.
- **Cyclical:** Research is a cyclical process because it starts with a problem and ends with a problem. The result of research can be negative, positive or even nil.
- **Analytical:** Research utilizes proven analytical procedures in gathering the data, whether historical, descriptive, and experimental and case study.
- **Critical:** Research exhibits careful and precise judgment.
- **Methodical:** Research is conducted in a methodical manner without bias using systematic method and procedures.
- **Reliability:** The research design and procedures are replicated or repeated to enable the researcher to arrive at valid and conclusive results.

Types of Research

- **Fundamental or basic research:** Fundamental research is also known as basis research. If the goal of the research is to find out the basic truth or principles, it is called as fundamental or basic research. This type of research is carried out in a laboratory or other sterile environment, sometimes with animals also. Examples of fundamental research Newton Law.
- **Applied research:** most of the characteristics of fundamental research is found in applied

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research. This type of research involves finding new applications of scientific knowledge to the solution of a problem such as development of the new system, new device or new methods or tools in order to solve the problem. Mind it, most of the educational research falls under the category of applied research.

- **Action research:** action research is used to solve an immediate application, not on the development of theory or general application. If the researcher finds any problem at time of his fields, investigation and observation, the researcher applies action research at that time
- **Historical research:** Historical research talks about the past. In this type of research we need investigation, recording, analyzing and interpreting the events of the past for the purpose of discovering generalization.
- **Quantitative descriptive research:** This method is used to describe what is being described, recording, analyzing, and interpreting conditions that make this around ours. It is used to discover the relationship between non-manipulated existing variables.
- **Qualitative descriptive research:** This type of research use non-quantitative methods. This method of research is used to discover non-quantified relationship between existing variable.
- **Experimental research:** It describes "what will happen" in the future if certain variables are carefully controlled and manipulated. Main focus of this kind of research is to find out the relationship between variables

Qualities of a researcher

- must be of the temperament that vibrates in unison with the theme which he is searching
- intelligence about subject matter of research
- must having knowledge of research methodology
- must possess an alert mind
- Must have immense courage and a sense of conviction.
- Should cultivate the habit of reserving judgment when the required data are insufficient.

Research design

The **research design** refers to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the **research** problem, it constitutes the blueprint for the collection, measurement, and analysis of data.

Types of Research Design

1. Exploratory Research Design (Formative research Design)

- The main objective of using such a research design is to formulate a research problem for an in-depth or more precise investigation, or for developing a working hypothesis from an operational aspect. The major purpose of such studies is the discovery of ideas and insights.
- Therefore, such a research design suitable for such a study should be flexible enough to provide the opportunity for considering different dimensions of the problem under study.
- The inbuilt flexibility in research design is required as the initial research problem would be transformed into a more precise one in the exploratory study, which in turn may necessitate changes in the research procedure for collecting relevant data.
- Usually, the following three methods are considered in the context of a research design for such studies. They are

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- a survey of related literature;
- experience survey; and
- analysis of 'insight stimulating' instances.

2. Descriptive And Diagnostic Research Design

- A Descriptive Research Design is concerned with describing the characteristics of a particular individual or a group.
- a diagnostic research design determines the frequency with which a variable occurs or its relationship with another variable.
- the study analyzing whether a certain variable is associated with another comprises a diagnostic research study. On the other hand, a study that is concerned with specific predictions or with the narration of facts and characteristics related to an individual, group or situation, are instances of descriptive research studies.

3. Hypothesis-Testing Research Design

- Hypothesis-Testing Research Designs are those in which the researcher tests the hypothesis of the causal relationship between two or more variables.
- These studies require procedures that would not only decrease bias and enhance reliability, but also facilitate deriving inferences about the causality.

IMPORTANT TERMNOLOGY IN RESEARCH

Dependent and Independent Variables

- A magnitude that varies is known as a variable. The concept may assume different quantitative values like height, weight, income etc. Qualitative variables are not quantifiable in the strictest sense of the term.
- The phenomena that assume different values quantitatively even in decimal points are known as 'continuous variables'. But all variables need not be continuous.
- Values that can be expressed only in integer values are called 'non-continuous variables'. In statistical terms, they are also known as 'discrete variables'.
- When changes in one variable depending upon the changes in other variable or variables, it is known as a dependent or endogenous variable, and the variables that cause the changes in the dependent variable are known as the independent or explanatory or exogenous variables.
- The independent variables which are not directly related to the purpose of the study but affect the dependent variables are known as extraneous variables.

Control- One of the most important features of a good research design is to minimize the effect of the extraneous variable(s). Technically, the term 'control' is used when a researcher designs the study in such a manner that minimizes the effects of extraneous variables.

Research Hypothesis

- When a prediction or a hypothesized relationship is tested by adopting scientific methods, it is known as the research hypothesis.
- The research hypothesis is a predictive statement which relates to a dependent variable and an independent variable.
- Whereas the relationships that are assumed but not to be tested are predictive statements that are not to be objectively verified, thus are not classified as research hypotheses.

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- The research in which the independent variable is manipulated is known as 'experimental hypothesis-testing research', whereas the research in which the independent variable is not manipulated is termed as 'non-experimental hypothesis-testing research.

Experimental And Control Groups :- When a group is exposed to usual conditions in experimental hypothesis-testing research, it is known as 'control group'. On the other hand, when the group is exposed to a certain new or special condition, it is known as an 'experimental group'.

Treatments :- Treatments refer to the different conditions to which the experimental and control groups are subject to.

Experiment :-Experiment refers to the process of verifying the truth of a statistical hypothesis relating to a given research problem.

Hypothesis

- The hypothesis may be defined as a proposition or a set of propositions set forth as an explanation for the occurrence of some specified group of phenomena either asserted merely as a provisional conjecture to guide some investigation in the light of facts(Kothari, 1988).
- Essential features about Hypothesis:

❖ must be capable of being put to test.
❖ must state the relationship between two variables, in the case of relational hypotheses.
❖ must be specific and limited in scope.
❖ must be stated in the simplest language, to make it understood by all concerned.
❖ must be consistent and derived from the most known facts
❖ must be amenable to testing within a stipulated or reasonable period.
❖ should state the facts that give rise to the necessity of looking for an explanation.

SAMPLING

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population. The methodology used to **sample** from a larger population depends on the type of analysis being performed, but it may include simple random **sampling** or systematic **sampling**.

METHODS OF SAMPLING

Probability Sampling Methods

1. Simple random sampling

In this case each individual is chosen entirely by chance and each member of the population has an equal chance, or probability, of being selected. One way of obtaining a random sample is to give each individual in a population a number, and then use a table of random numbers to decide which individuals to include.

2. Systematic sampling

Individuals are selected at regular intervals from the sampling frame. The intervals are chosen to ensure an adequate sample size. If you need a sample size *n* from a population of size *x*, you should select every x/n^{th} individual for the sample. For example, if you wanted a sample size of 100 from a population of 1000, select every 1000/100 = 10^{th} member of the sampling frame.

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3. Stratified sampling

In this method, the population is first divided into subgroups (or strata) who all share a similar characteristic. It is used when we might reasonably expect the measurement of interest to vary between the different subgroups, and we want to ensure representation from all the subgroups.

4. Clustered sampling

In a clustered sample, subgroups of the population are used as the sampling unit, rather than individuals. The population is divided into subgroups, known as clusters, which are randomly selected to be included in the study. Clusters are usually already defined, for example individual GP practices or towns could be identified as clusters. In single-stage cluster sampling, all members of the chosen clusters are then included in the study. In two-stage cluster sampling, a selection of individuals from each cluster is then randomly selected for inclusion. Clustering should be taken into account in the analysis.

Non-Probability Sampling Methods

1. Convenience sampling

Convenience sampling is perhaps the easiest method of sampling, because participants are selected based on availability and willingness to take part. Useful results can be obtained, but the results are prone to significant bias

2. Quota sampling

This method of sampling is often used by market researchers. Interviewers are given a quota of subjects of a specified type to attempt to recruit.

3. Judgement (or Purposive) Sampling

Also known as selective, or subjective, sampling, this technique relies on the judgement of the researcher when choosing who to ask to participate.

4. Snowball sampling

This method is commonly used in social sciences when investigating hard-to-reach groups. Existing subjects are asked to nominate further subjects known to them, so the sample increases in size like a rolling snowball.

Bias in sampling

There are five important potential sources of bias that should be considered when selecting a sample, irrespective of the method used. Sampling bias may be introduced when:[1]

1. Any pre-agreed sampling rules are deviated from
2. People in hard-to-reach groups are omitted
3. Selected individuals are replaced with others, for example if they are difficult to contact
4. There are low response rates
5. An out-of-date list is used as the sample frame (for example, if it excludes people who have recently moved to an area)

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- Formulating the Research Problem (Including Extensive Literature Review)
- Developing the objectives/Conceptualization a research design
- Preparing the Research Design /Constructing an instrument for data collection
- Selecting a sampling design
- Writing a research proposal
- Collecting the Data
- Analysis of Data/ Processing and displaying data /Including Generalization and Interpretation
- Preparation of the Report or Presentation of Results-Formal write-ups of conclusions reached.

Application of ICT in research, Tools & Services for Research

1. Search Engine & Research Papers

Google/Bing/Yahoo and many other search engines help you to find useful and relevant contents. This also helps you to explore the millions of thesis and already published articles and keeps you up to date with the latest happenings in your area of interest.

Below are important Online Tools to explore millions of research article across the globe.

- **Google Scholar** – Provides a way to broadly search for scholarly literature across disciplines and sources.
- **Microsoft Academic Search** – Find information about academic papers, authors, conferences, journals, and organizations from multiple sources.
- **Science scope** – Innovation in the exploration of papers and authors.
- **ResearchGate** – ResearchGate is the professional network for scientists and researchers. Over 15 million members from all over the world use it to share, discover, and discuss research.
- **Biohunter** – Portal with literature search, data statistics, reading, sorting, storing, field expert identification and journal finder.
- **edu** -is a platform for academics to share research papers. The company's mission is to accelerate the world's research.
- **SSRN** – Multi-disciplinary online repository of scholarly research and related materials in social sciences.
- **DeepDyve**- provides simple and affordable access to millions of articles across thousands of peerreviewed journals. Content from the world's leading publishers including Reed Elsevier, Springer, Wiley-Blackwell, and more.
- **Wiki Journal Club** – Open, user-reviewed summaries of the top studies in medical research.

2. Shared Dataset & Code

- **DataBank**– Analysis and visualization tool that contains collections of time series data on a variety of topics.
- **Google**- Google periodically releases data of interest to researchers in a wide range of computer science disciplines.
- **GitHub**– Online software project hosting using the Git revision control system.
- **Open Science Framework**– Gathers a network of research documents, a version control system, and collaboration software.
- **SlideShare**– Community for sharing presentations and other professional content
- **gov.uk**-The British government's official data portal offers access to tens of thousands of data sets on topics such as crime, education, transportation, and health
- **gov**- The USA government's official data portal offers access to tens of thousands of data sets
- **gov.in**- Open Government Data (OGD) Platform India – is a platform for supporting Open Data initiative of Government of India. The portal is intended to be used by Government of India

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- **Code Ocean**– Cloud-based computational platform which provides a way to share, discover and run published code.
- **Peer Evaluation**– Open repository for data, papers, media coupled with an open review and discussion platform.

3. Connect & Communicate with experts and researchers

- **Academia**– A place to share and follow research and researchers.
- **net** – Online platform for professional networking and sharing of knowledge in life sciences.
- **Open Science Framework**– Gathers a network of research documents, a version control system, and collaboration software.
- **ResearchGate**– Social network for researchers.
- **AcademicJoy**– Sharing research ideas and story in research and innovation.
- **Experiment**– Crowdfunding Platform for Scienti c Research.
- **Linkedin**- Connect with people in your area of interest.
- **Thinkable**– Platform to mobilize knowledge and fund breakthrough ideas.
- **ScienceOpen**– Freely accessible research network to share and evaluate scienti c information.
- **Communication tools**– web-ex, skype, TeamViewers, anywhere,

4. Free Digital Library

The National Digital library of India is a project under the Ministry of Human Resource Development, India. The objective is to integrate several national and international digital libraries in one single web-portal. The NDL provides free access to many books in English and the Indian languages.

5. Simulation/Lab and project management

Internet of things is coming to laboratories and connecting instrumentation to the internet allowing us to perform experiments from anywhere in the world.
Virtual Labs project is an initiative of the Ministry of Human Resource Development (MHRD), Government of India under the aegis of National Mission on Education through Information and Communication Technology (NMEICT). This project is a consortium activity of twelve participating institutes and IIT Delhi is coordinating institute. It is a paradigm shift in ICT-based education. For the first time, such an initiative has been taken-up in remote-experimentation.

- **Lab Suit**– Inventory Management, orders Management, materials Trade-In, price Comparison.
- **Life technologies Lab Management Tool** – Management tool for lab equipment and services.
- **LiveLabSpace**– Collaborative research tool that lets you plan experiments, replicate outcomes and generate research papers.

6. Write & publish research papers

Various online available writing tools are the needs of researchers. Tools are required to store and manage references, collaborations across labs and continents, collaborative writing tools & track of the modifications done by others to the manuscript.

- **CitationStyles** – Find and edit CSL citation styles.
- **Papers** – helps you collect and curate the research material that you're passionate about.
- **Zotero** – helps you collect, organize, cite, and share your research sources
- **Draft** – Version control and collaboration to improve your writing.
- **Typewrite** – A simple, real-time collaborative writing environment.
- **ScienceOpen** – Freely accessible research network to share and evaluate scientific information.

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- India has been ranked 121st among 157 countries in terms of progress in the realm of information and communication technology (ICT) in a newly-released report of the International Telecommunication Union (ITU), which makes an annual assessment based on a wide range of parameters and data
- National Mission on Education through ICT (NMEICT) is a major initiative of the Govt. of India in this direction intending to leverage the potential of ICT in providing high quality personalized and interactive content, free of cost, to all the learners.
- The National Mission on Education through Information and Communication Technology (ICT) has, under its aegis, created Virtual Labs, Open Source and Access Tools, Virtual Conference Tools, Talk to Teacher programs, a Non-Invasive Blood Glucometer and also for simulated lab experiments, a Di. Electric frequency shifts the application development of resonator for low-cost oscillators.

RESEARCH ETHICS

- Research Ethics is a set of guidelines that help researchers to conduct research successfully. The major principals revolve around the research process, data collection, interpretation of data, report publication, thesis, confidentiality, obfuscation and plagiarism.
- The ethics are closely related to the moral and value, it explains norms for conduct that distinguish between 'what is wrong' & 'what is right'.
- It fosters a research culture that adheres to 'relevant legislation governing the protection of the dignity, rights, safety and privacy of those involved in research;' 'provide clear and easily accessible guidance on best ethical practice and regulatory requirements'; 'offer support and training to staff and students and any others

General Ethical Issues

- Ethical issues related to the research process
- Ethical issues related to participant or researcher
- Ethical issues related to sponsoring institution

MCQ on Research Aptitude for NTA -NET Exam

1. There are two sets given below. Set – I specifies the types of research, while Set – II indicates their characteristics. Match the two and give your answer by selecting the appropriate code.

Set – I Set – II
(Research types) (Characteristics)

(a) Fundamental research (i) Finding out the extent of perceived impact of an intervention

(b) Applied research (ii) Developing an effective explanation through theory building

(c) Action research (iii) Improving an existing situation through use of interventions

(d) Evaluative research (iv) Exploring the possibility of a theory for use in various situations

(v) Enriching technological resources

Code :

(a) (b) (c) (d)

(1) (ii) (iv) (iii) (i)

(2) (v) (iv) (iii) (ii)

(3) (i) (ii) (iii) (iv)

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(4) (ii) (iii) (iv) (v)

Answer: 1

2. Which of the sets of activities best indicate the cyclic nature of action research strategy ?

(1) Reflect, Observe, Plan, Act

(2) Observe, Act, Reflect, Plan

(3) Act, Plan, Observe, Reflect

(4) Plan, Act, Observe, Reflect

Answer: 4

3. Which of the following sequences of research steps is nearer to scientific method ?

(1) Suggested solution of the problem , deducing the consequences of the solution, perceiving the problem situation, location of the difficulty and testing the solution.

(2) Perceiving the problem situation, Locating the actual problem and its definition, Hypothesizing, Deducing the consequences of the suggested solution and Testing the hypothesis in action.

(3) Defining a problem, Identifying the causes of the problem, Defining a population, Drawing a sample, Collecting data and Analysing results.

(4) Identifying the causal factors, Defining the problem, Developing a hypothesis, Selecting a sample, Collecting data and arriving at generalizations and Conclusions.

Answer: 3

4. The problem of 'research ethics' is concerned with which aspect of research activities ?

(1) Following the prescribed format of a thesis

(2) Data analysis through qualitative or quantitative techniques

(3) Defining the population of research

(4) Evidence based research reporting

Answer: 4

5. In which of the following activities, potential for nurturing creative and critical thinking is relatively greater ?

(1) Preparing research summary

(2) Presenting a seminar paper

(3) Participation in research conference

(4) Participation in a workshop

Answer: 4

6. Which of the following research types focuses on ameliorating the prevailing situations ?

(1) Fundamental Research

(2) Applied Research

(3) Action Research

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(4) Experimental Research

Answer : 3

7. A researcher attempts to evaluate the effect of method of feeding on anxiety – proneness of children. Which method of research would be appropriate for this ?

(1) Case study method

(2) Experimental method

(3) Ex-post-facto method

(4) Survey method

Answer : 3

8. In which of the following arrangements a wider spectrum of ideas and issues may be made possible ?

(1) Research Article

(2) Workshop mode

(3) Conference

(4) Symposium

Answer : 2

9. In finalizing a thesis writing format which of the following would form part of supplementary pages ?

(1) List of tables and figures

(2) Table of contents

(3) Conclusions of the study

(4) Bibliography and Appendices

Answer : 1

10. Which of the following is susceptible to the issue of research ethics ?

(1) Inaccurate application of statistical techniques

(2) Faulty research design

(3) Choice of sampling techniques

(4) Reporting of research findings

Answer : 4

11. The principal of a school conducts an interview session of teachers and students with a view to explore the possibility of their enhanced participation in school programmes. This endeavour may be related to which type of research ?

(1) Evaluation Research

(2) Fundamental Research

(3) Action Research

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(4) Applied Research

Answer: 3

12. In doing action research what is the usual sequence of steps ?

(1) Reflect, observe, plan, act

(2) Plan, act, observe, reflect

(3) Plan, reflect, observe, act

(4) Act, observe, plan, reflect

Answer: 2

13. Which sequence of research steps is logical in the list given below ?

(1) Problem formulation, Analysis, Development of Research design, Hypothesis making, Collection of data, Arriving at generalizations and conclusions.

(2) Development of Research design, Hypothesis making, Problem formulation, Data analysis, Arriving at conclusions and data collection.

(3) Problem formulation, Hypothesis making, Development of a Research design, Collection of data, Data analysis and formulation of generalizations and conclusions.

(4) Problem formulation, Deciding about the sample and data collection tools, Formulation of hypothesis, Collection and interpretation of research evidence.

Answer: 3

14. Below are given two sets – research methods (Set-I) and data collection tools (Set-II). Match the two sets and indicate your answer by selecting the correct code :

Set – I
(Research Methods)
Set – II
(Data Collection Tools)

a. Experimental method i. Using primary and secondary sources

b. Ex post-facto method ii. Questionnaire

c. Descriptive survey method iii. Standardized tests

d. Historical method iv. Typical characteristic tests Codes :

a b cd

(1) ii i iiiiv

(2) iii iv iii

(3) ii iii iiv

(4) ii iv iiii

Answer: 2

15. The issue of 'research ethics' may be considered pertinent at which stage of research ?

(1) At the stage of problem formulation and its definition

(2) At the stage of defining the population of research

(3) At the stage of data collection and interpretation

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(4) At the stage of reporting the findings.

Answer :4

16. In qualitative research paradigm, which of the following features may be considered critical?

(A) Data collection with standardised research tools.

(B) Sampling design with probability sample techniques.

(C) Data collection with bottom-up empirical evidences.

(D) Data gathering to take with top-down systematic evidences.

Answer: C

17. From the following list of statements identify the set which has negative implications for 'research ethics' :

(i) A researcher critically looks at the findings of another research.

(ii) Related studies are cited without proper references.

(iii) Research findings are made the basis for policy making.

(iv) Conduct of practitioner is screened in terms of reported research evidences.

(v) A research study is replicated with a view to verify the evidences from other researches.

(vi) Both policy making and policy implementing processes are regulated in terms of preliminary studies.

Codes:

(A) (i), (ii) and (iii)

(B) (ii), (iii) and (iv)

(C) (ii), (iv) and (vi)

(D) (i), (iii) and (v)

Answer: C

18. A research intends to explore the effect of possible factors for the organization of effective mid-day meal interventions. Which research method will be most appropriate for this study?

(A) Historical method

(B) Descriptive survey method

(C) Experimental method

(D) Ex-post-facto method

Answer: D

19. Which of the following is an initial mandatory requirement for pursuing research?

(A) Developing a research design

(B) Formulating a research question

(C) Deciding about the data analysis procedure

(D) Formulating a research hypothesis

Answer: B

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20. The format of thesis writing is the same as in

(A) preparation of a research paper/article

(B) writing of seminarpresentation

(C) a research dissertation

(D) presenting a workshop/conference paper

Answer: C

21. Which of the following statements is not true in the context of participatory research?

(A) It recognizes knowledge as power.

(B) It emphasises on people as experts.

(C) It is a collective process of enquiry.

(D) Its sole purpose is production of knowledge.

Answer: D

22. Which of the following statements is true in the context of the testing of a hypothesis?

(A) It is only the alternative hypothesis, that can be tested.

(B) It is only the null hypothesis, that can be tested.

(C) Both, the alternative and the null hypotheses can be tested.

(D) Both, the alternative and the null hypotheses cannot be tested.

Answer: B

23. Which of the following are the basic rules of APA style of referencing format?

(a) Italicize titles of shorter works such as journal articles or essays

(b) Invert authors' names (last name first)

(c) Italicize titles of longer works such as books and journals

(d) Alphabetically index referencelist

Select the correct answer from the codes given below:

(A) (a) and (b)

(B) (b), (c) and (d)

(C) (c) and (d)

(D) (a), (b), (c) and (d)

Answer: B

24. Which of the following are the characteristics of a seminar?

(a) It is a form of academic instruction.

(b) It involves questioning, discussion and debates.

(c) It involves large groups of individuals.

(d) It needs involvement of skilled persons.

Select the correct answer from the codes given below

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(A) (b) and (c)

(B) (b) and (d)

(C) (b), (c) and (d)

(D) (a), (b) and (d)

Answer: D

25. A researcher is interested in studying the prospects of a particular political party in an urban area. What tool should he prefer for the study?

(A) Rating scale

(B) Interview

(C) Questionnaire

(D) Schedule

Answer: C

26. Ethical norms in research do not involve guidelines for:

(A) Thesis format

(B) Copyright

(C) Patenting policy

(D) Data sharing policies

Answer: A

27. Consider the argument given below:

'Pre – employment testing of teachers is quite fair because doctors, architects and engineers who are now employed had to face such a testing.'

What type of argument it is?

(A) Deductive

(B) Analogical

(C) Psychological

(D) Biological

Answer: B

28. A definition that has a meaning that is deliberately assigned to some symbol is called:

(A) Lexical

(B) Precising

(C) Stipulative

(D) Persuasive

Answer: C

29. A Cluster of propositions with a structure that exhibits some inference is called

(A) An inference

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(B) An argument

(C) An explanation

(D) A validargument

Answer: B

30. Which of the following statements regarding the meaning of research are correct

(a) Research refers to a series of systematic activity or activities undertaken to find out the solution of a problem

(b) It is a systematic, logical and an unbiased process wherein verification of hypothesis data analysis, interpretation and formation of principles can be done

(c) It is an intellectual enquiry or quest towards truth

(d) It leads to enhancement of knowledge

(A) (a), (b) and(c)

(B) (b), (c) and (d)

(C) (a), (c) and(d)

(D) (a), (b), (c) and (d)

Answer: D

31. A good thesis writing should involve

(a) reduction of punctuation and grammatical errors to a minimum

(b) careful checking ofreferences

(c) consistency in the way the thesis is written

(d) a clear and well written abstract

(A) (a), (b), (c) and (d)

(B) (a), (b) and(c)

(C) (a), (b) and (d)

(D) (b), (c) and (d)

Answer: A

32. Jean Piaget gave a theory of cognitive development of humans on the basis of his

(A) Fundamental research e basis of his

(B) applied research

(C) Action research

(D) Evaluation Research

Answer: A

33. “Male and female students perform equally well in a numerical aptitude test.”
This statement indicates a(A) research hypothesis

(B) null hypothesis

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(C) directional hypothesis

(D) statistical hypothesis

Answer: B

34. The conclusions/findings of which type of research cannot be generalized to other situations

(A) Historical research

(B) Descriptive Research

(C) Experimental Research

(D) Causal Comparative Research

Answer: C

35. Which of the following steps are required to design a questionnaire

(a) Writing primary and secondary aims of the study

(b) Review of the currentliterature

(c) Prepare a draft of questionnaire

(d) Revision of thedraft

(A) (a), (b) and(c)

(B) (a), (c) and(d)

(C) (b), (c) and (d)
(D) (a), (b), (c) and (d)

Answer: B

36. When the purpose of a definition is to explain the use or to eliminate ambiguity the definition is called

(A) Stipulative

(B) Theoretical

(C) Lexical

(D) Persuasie

Answer: B

37. The core elements of dissertation are

(A) Introduction; Data Collection; Data Analysis; Conclusions and Recommendations

(B) Executive Summary; Literature review; Data gathered; Conclusions; Bibliography

(C) Research Plan; Research Data; Analysis; References

(D) Introduction; Literature Review; Research Methodology; Results; Discussion and Conclusion Answer:

D

38. What is a Research Design?
(A) A Way of conducting research that is not grounded in theory.
(B) The choice between using qualitative or quantitative methods.

(C) The style in which you present your research findings e.g. a graph.

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(D) A framework for every stage of the collection and analysis of data.

Answer: D

39. "Sampling Cases" means

(A) Sampling using a sampling frame

(B) Identifying people who are suitable for research

(C) Literally the researcher's briefcase

(D) Sampling of people, newspapers, television programmes etc.

Answer: D

40. The frequency distribution of a research data which is symmetrical in shape similar to a normal distribution but center peak is much higher, is

(A) Skewed

(B) Mesokurtic

(C) Leptokurtic

(D) Platykurtic

Answer: C

41. When planning to do a social research, it is better to

(A) Approach the topic with an open mind

(B) Do a pilot study before getting stuck into it

(C) Be familiar with literature on the topic

(D) Forget about theory because this is a very practical

Answer: A

42. When academicians are called to deliver lecture or presentations to an audience on certain topics or a set of topics of educational nature, it is called

(A) Training Program

(B) Seminar

(C) Workshop

(D) Symposium

Answer: B

43. Media is knownas

(A) First Estate

(B) Second Estate

(C) Third Estate

(D) Fourth Estate Answer: D

44. In a thesis, figures and tables are included in

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(A) The appendix
(B) A separate chapter
(C) The concluding chapter
(D) The text itself

Answer: D

45. A thesis statement is
(A) An observation
(B) A fact
(C) An assertion
(D) A discussion

Answer: C

46. The research approach of Max Weber to understand how people create meanings in natural settings is identified as
(A) Positive paradigm
(B) Critical paradigm
(C) Natural paradigm
(D) Interpretative paradigm

Answer: D

47. Which one of the following is a non probability sampling?
(A) Simple Random
(B) Purposive
(C) Systematic
(D) Stratified

Answer: B

48. Identify the category of evaluation that assesses the learning progress to provide continuous feedback to the students during instruction.
(A) Placement
(B) Diagnostic
(C) Formative
(D) Summative

Answer: C

49. The research stream of immediate application is
(A) Conceptual research
(B) Action research

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(C) Fundamental research

(D) Empirical research

Answer: B

50. The population information is called parameter while the corresponding sample information is known as

(A) Universe

(B) Inference

(C) Sampling design

(D) Statistics

Answer: D

51. The sequential operations in scientific research are

(A) Co-vaiation, Elimination of Spurious Relations, Generalisation, Theorisation

(B) Generalisation, Co-variation, Theorisation, Elimination of Spurious Relations

(C) Theorisation, Generalisation, Elimination of Spurious Relations, Co-variation

(D) Elimination of Spurious Relations, Theorisation, Generalisation, Co-variation.

Answer: A

52. In sampling, the lottery method is used for

(A) Interpretation

(B) Theorisation

(C) Conceptualisation

(D) Randomisation

Answer: D

53. Which is the main objective of research?

(A) To review the literature

(B) To summarize what is already known

(C) To get an academic degree

(D) To discover new facts or to make fresh interpretation of known facts Answer:

D

54. Sampling error decreases with the

(A) Decrease in samplesize

(B) Increase in samplesize

(C) Process of randomization

(D) Process of analysis

Answer: B

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55. The Principles of fundamental research are used in

(A) Action research

(B) Applied research

(C) Philosophical research

(D) Historical research

Answer: B

56. Which one of the following is not a non-parametric test ?

(A) t-test

(B) Sign test

(C) Chi-square test

(D) Ro Test

Answer: A

57. Read the following statements – one labelled as Assertion (A) and the other as Reason (R) : Assertion (A) : Qualitative research in India has a long way to go to reach international standards.

Reason (R) : Because the funding agencies do not support qualitative research in academic institutions.

Find the correct answer from the codes given below :

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

(B) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

(C) Both (A) and (R) are false.

(D) (A) is true, but (R) is false

Answer: D

58. Identify the correct sequence of research steps :

(A) Selection of topic, review of literature, data collection, interpretation of findings

(B) Review of literature, selection of topic, data collection, interpretation of findings

(C) Selection of topic, data collection, review of literature, interpretation of findings

(D) Selection of topic, review of literature, interpretation of findings, data collection Answer: A

59. Deconstruction is a popular method of research in

(A) Basic Science

(B) Applied Science

(C) Social Science

(D) Literature

Answer: D

60. With which one of the following techniques communality is associated?

(A) Univariate analysis

(B) Factor analysis

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(C) Case studies

(D) SWOT analysis

Answer: B

61. The variable which impacts the relationship between an independent variable and a dependent variable is known as

(A) antecedent variable

(B) precedent variable

(C) predictor variable

(D) control variable

Answer: D

62. Which one of the following is a nonprobability sampling method?

(A) Simple Random Sampling

(B) Stratified Sampling

(C) Cluster Sampling

(D) Quota Sampling

Answer: D

63. A research paper

(A) is a compilation of information on a topic.

(B) contains original research as deemed by the author.

(C) contains peer-reviewed original research or evaluation of research conducted by others.

(D) can be published in more than one journal.

Answer: C

64. Which one of the following belongs to the category of good 'research ethics'?

(A) Publishing the same paper in two research journals without telling the editors.

(B) Conducting a review of the literature that acknowledges the contributions of other people in the relevant field or relevant prior work.

(C) Trimming outliers from a data set without discussing your reasons in a research paper.

(D) Including a colleague as an author on a research paper in return for a favor even though the colleague did not make a serious contribution to the paper.

Answer: B

65. Which of the following sampling methods is not based on probability?

(A) Simple Random Sampling

(B) Stratified Sampling

(C) Quota Sampling

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(D) Cluster Sampling

Answer: (c)

66. Which one of the following references is written as per Modern Language Association (MLA) format?

(A) Hall, Donald. Fundamentals of Electronics, New Delhi : Prentice Hall of India, 2005

(B) Hall, Donald. Fundamentals of Electronics, New Delhi : Prentice Hall of India, 2005

(C) Hall, Donald. Fundamentals of Electronics, New Delhi : Prentice Hall of India, 2005

(D) Hall, Donald. Fundamentals of Electronics, New Delhi : Prentice Hall of India, 2005 Answer:

D

67. A workshop is

(A) a conference for discussion on a topic.

(B) a meeting for discussion on a topic.

(C) a class at a college or a university in which a teacher and the students discuss a topic.

(D) a brief intensive course for a small group emphasizing the development of a skill or technique for solving a specific problem.

Answer: D

68. A working hypothesis is

(A) a proven hypothesis for an argument.

(B) not required to be tested.

(C) a provisionally accepted hypothesis for further research.

(D) a scientific theory.

Answer: C

69. Which one of the following is an indication of the quality of a research journal?

(A) Impact factor

(B) h-index

(C) g-index

(D) i10-index

Answer: A

70. Good 'research ethics' means

(A) Not disclosing the holdings of shares/stocks in a company that sponsors your research.

(B) Assigning a particular research problem to one Ph.D./research student only.

(C) Discussing with your colleagues confidential data from a research paper that you are reviewing for an academic journal.

(D) Submitting the same research manuscript for publishing in more than one journal.

Answer: B

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71. Which of the following sampling methods is based on probability?

(A) Convenience sampling

(B) Quota sampling

(C) Judgement sampling

(D) Stratified sampling

Answer: D

72. Which one of the following references is written according to American Psychological Association (APA) format?

(A) Sharma, V. (2010). Fundamentals of Computer Science. New Delhi : Tata McGraw Hill

(B) Sharma, V. 2010. Fundamentals of Computer Science. New Delhi : Tata McGraw Hill

(C) Sharma.V. 2010. Fundamentals of Computer Science, New Delhi : Tata McGraw Hill

(D) Sharma, V. (2010), Fundamentals of Computer Science, New Delhi : Tata McGraw Hill Answer:

A

73. Arrange the following steps of research in correct sequence :

(1) Identification of research problem

(2) Listing of research objectives

(3) Collection of data

(4) Methodology

(5) Data analysis

(6) Results and discussion

(A) 1 – 2 – 3 – 4 – 5 – 6

(B) 1 – 2 – 4 – 3 – 5 – 6

(C) 2 – 1 – 3 – 4 – 5 – 6

(D) 2 – 1 – 4 – 3 – 5 – 6

Answer: B

74. Identify the incorrect statement:

(A) A hypothesis is made on the basis of limited evidence as a starting point for further investigations.

(B) A hypothesis is a basis for reasoning without any assumption of its truth.

(C) Hypothesis is a proposed explanation for a phenomenon.

(D) Scientific hypothesis is a scientific theory.

Answer: D

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READING COMPREHENSION

Read the following passage carefully and answer question numbers 1 to 5.

I did that thing recently where you have to sign a big card - which is a horror unto itself, especially as the keeper of the Big Card was leaning over me at the time. Suddenly I was on the spot, a rabbit in the headlights, torn between doing a fun message or some sort of in-joke or a drawing. Instead overwhelmed by the myriad options available to me, I decided to just write: "Good luck, best, Joel".

It was then that I realised, to my horror, that I had forgotten how to write. My entire existence is "tap letters into computer". My shopping lists are hidden in the notes function of my phone. If I need to remember something I send an e-mail to myself. A pen is something I chew when I'm struggling to think. Paper is something I pile beneath my laptop to make it a more comfortable height for me to type on.

A poll of 1,000 teens by the stationers, Bic found that one in 10 don't own a pen, a third have never written a letter, and half of 13 to 19 years - old have never been forced to sit down and write a thank you letter. More than 80 % have never written a love letter, 56 % don't have letter paper at home. And a quarter have never known the unique torture of writing a birthday card. The most a teen ever has to use a pen is on an exam paper.

Bic, have you heard of mobile phones? Have you heard of e-mail, facebook and snap chatting? This is the future. Pens are dead. Paper is dead. Handwriting is a relic.

"Handwriting is one of the most creative outlets we have and should be given the same importance as other art forms such as sketching, painting or photography."

Answer the following questions:

1. When confronted with signing a big card, the author felt like "a rabbit in the headlight". What does this phrase mean?

(1) A state of confusion

(2) A state of pleasure

(3) A state of anxiety

(4) A state of pain

Answer: 1

2. According to the author, which one is not the most creative outlet of pursuit?

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(1) Handwriting

(2) Photography

(3) Sketching

(4) Reading

Answer: 4

3. The entire existence of the author revolves round:
(a) Computer

(b) Mobile phone

(c) Typewriter

Identify the correct answer from the codes given below:
(1) (b) only

(2) (a) and (b) only

(3) (a), (b) and (c)

(4) (b) and (c) only

Answer: 2

4. How many teens, as per the Bic survey, do not own a pen?
(1) 800

(2) 560

(3) 500

(4) 100

Answer: 4

5. What is the main concern of the author?
(1) That the teens use social networks for communication.

(2) That the teens use mobile phones.

(3) That the teens use computer.

(4) That the teens have forgotten the art of handwriting.

Answer: 4

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Read the following passage carefully and answer question numbers from 6 to 11:

In terms of labour, for decades the relatively low cost and high quality of Japanese workers conferred considerable competitive advantage across numerous durable goods and consumerelectronics industries (eg. Machinery, automobiles, televisions, radios). Then labour-based advantages shifted to South Korea, then to Malaysia, Mexico and other nations. Today, China appears to be capitalizing best on the basis of labour. Japanese firms still remain competitive in markets for such durable goods, electronics and other products, but the labour force is no longer sufficient for competitive advantage over manufacturers in other industrializing nations. Such shifting of labour-based advantage is clearly not limited to manufacturing industries. Today, a huge number of IT and service jobs are moving from Europe and North America to India, Singapore, and like countries with relatively well-educated, low-cost workforces possessing technical skills. However, as educational levels and technical skills continue to rise in other countries, India, Singapore, and like nations enjoying labour-based competitive advantage today are likely to find such advantage cannot be sustained through emergence of new competitors.

In terms of capital, for centuries the days of gold coins and later even paper money restricted financial flows. Subsequently regional concentrations were formed where large banks, industries and markets coalesced. But today capital flows internationally at rapid speed. Global commerce no longer requires regional interactions among business players. Regional capital concentrations in places such as New York, London and Tokyo still persist, of course, but the capital concentrated there is no longer sufficient for competitive advantage over other capitalists distributed worldwide. Only if an organization is able to combine, integrate and apply its resources (eg. Land, labour, capital, IT) in an effective manner that is not readily imitable by competitors can such an organization enjoy competitive advantage sustainable overtime.

In a knowledge-based theory of the firm, this idea is extended to view organizational knowledge as a resource with atleast the same level of power and importance as the traditional economic inputs. An organization with superior knowledge can achieve competitive advantage in markets that appreciate the application of such knowledge. Semiconductors, genetic engineering, pharmaceuticals, software, military warfare, and like knowledge-intensive competitive arenas provide both time-proven and current examples. Consider semiconductors (e.g. computer chips), which are made principally of sand and common metals. These ubiquitous and powerful electronic devices are designed within common office buildings, using commercially available tools, and fabricated within factories in many industrialized nations. Hence, land is not the key competitive resource in the semiconductor industry.

Based on the passage answer the following questions:

6. Which country enjoyed competitive advantages in automobile industry for decades?

(1) South Korea

(2) Japan

(3) Mexico

(4) Malaysia

Answer: 2

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7. Why labour-based competitive advantages of India and Singapore cannot be sustained in IT and service sectors?
(1) Due to diminishing levels of skill.

(2) Due to capital-intensive technology making inroads.

(3) Because of new competitors.

(4) Because of shifting of labour-based advantage in manufacturing industries.

Answer: 3

8. How can an organisation enjoy competitive advantage sustainable overtime?
(1) Through regional capital flows.

(2) Through regional interactions among business players.

(3) By making large banks, industries and markets coalesced.

(4) By effective use of various instrumentalities.

Answer: 4

9. What is required to ensure competitive advantages in specific markets?
(1) Access to capital

(2) Common office buildings

(3) Superior knowledge

(4) Common metals

Answer: 3

10. The passage also mentions about the trend of
(1) Global financial flow

(2) Absence of competition in manufacturing industry

(3) Regionalisation of capitalists

(4) Organizational incompatibility

Answer: 1

11. What does the author lay stress on in the passage?
(1) International commerce

(2) Labour-Intensive industries

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(3) Capital resource management

(4) Knowledge-driven competitive advantage

Answer: 4

Read the following passage carefully and answer questions from 12 to 17:

The last great war, which nearly shook the foundations of the modern world, had little impact on Indian literature beyond aggravating the popular revulsion against violence and adding to the growing disillusionment with the 'humane pretensions' of the Western World. This was eloquently voiced in Tagore's later poems and his last testament, Crisis in Civilisation. The Indian intelligentsia was in a state of moral dilemma. On the one hand, it could not help sympathising with England's dogged courage in the hour of peril, with the Russians fighting with their backs to the wall against the ruthless Nazi hordes, and with China groaning under the heel of Japanese militarism; on the other hand, their own country was practically under military occupation of their own soil, and an Indian army under Subhas Bose was trying from the opposite camp to liberate their country. No creative impulse could issue from such confusion of loyalties. One would imagine that the achievement of Indian independence in 1947, which came in the wake of the Allies' victory and was followed by the collapse of colonialism in the neighbouring countries of South-East Asia, would have released an upsurge of creative energy. No doubt it did, but unfortunately it was soon submerged in the great agony of partition, with its inhuman slaughter of the innocents and the uprooting of millions of people from their homeland, followed by the martyrdom of Mahatma Gandhi. These tragedies, along with Pakistan's invasion of Kashmir and its later atrocities in Bangladesh, did indeed provoke a poignant writing, particularly in the languages of the regions most affected, Bengali, Hindi, Kashmiri, Punjabi, Sindhi and Urdu. But poignant or passionate writing does not by itself make great literature. What reserves of enthusiasm and confidence survived these disasters have been mainly absorbed in the task of national reconstruction and economic development. Great literature has always emerged out of chains of convulsions. Indian literature is richer today in volume, range and variety than it ever was in the past.

Based on the passage answer the following questions from 12 to 17:

12. What was the impact of the last great war on Indian literature?

(1) It had no impact.

(2) It aggravated popular revulsion against violence.

(3) It shook the foundations of literature.

(4) It offered eloquent support to the Western World.

Answer: 2

13. What did Tagore articulate in his last testament?

(1) Offered support to Subhas Bose.

(2) Exposed the humane pretensions of the Western World.

(3) Expressed loyalty to England.

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(4) Encouraged the liberation of countries.

Answer: 2

14. What was the stance of Indian intelligentsia during the period of great war?
(1) Indifference to Russia's plight.

(2) They favoured Japanese militarism.

(3) They prompted creativity out of confused loyalties.

(4) They expressed sympathy for England's dogged courage.

Answer: 4

15. Identify the factor responsible for the submergence of creative energy in Indian literature.
(1) Military occupation of one's own soil.

(2) Resistance to colonial occupation.

(3) Great agony of partition.

(4) Victory of Allies.

Answer: 3

16. What was the aftermath that survived tragedies in Kashmir and Bangladesh?
(1) Suspicion of other countries

(2) Continuance of rivalry

(3) Menace of war

(4) National reconstruction

Answer: 4

17. The passage has the message that
(1) Disasters are inevitable.

(2) Great literature emerges out of chains of convulsions.

(3) Indian literature does not have a marked landscape.

(4) Literature has no relation with war and independence.

Answer: 2

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Read the passage carefully and answer question numbers from 18 to 23.

Climate change is considered to be one of the most serious threats to sustainable development, with adverse impacts on the environment, human health, food security, economic activity, natural resources and physical infrastructure. Global climate varies naturally. According to the Intergovernmental Panel on Climate Change (IPCC), the effects of climate change have already been observed, and scientific findings indicate that precautionary and prompt action is necessary. Vulnerability to climate change is not just a function of geography or dependence on natural resources; it also has social, economic and political dimensions which influence how climate change affects different groups. Poor people rarely have insurance to cover loss of property due to natural calamities i.e. drought, floods, super cyclones etc. The poor communities are already struggling to cope with the existing challenges of poverty and climate variability and climate change could push many beyond their ability to cope or even survive. It is vital that these communities are helped to adapt to the changing dynamics of nature. Adaptation is a process through which societies make themselves better able to cope with an uncertain future. Adapting to climate change entails taking the right measures to reduce the negative effects of climate change (or exploit the positive ones) by making the appropriate adjustments and changes. These range from technological options such as increased sea defences or flood - proof houses on stilts to behavioural change at the individual level, such as reducing water use in times of drought. Other strategies include early warning systems for extreme events, better water management, improved risk management, various insurance options and biodiversity conservation. Because of the speed at which climate change is happening due to global temperature rise, it is urgent that the vulnerability of developing countries to climate change is reduced and their capacity to adapt is increased and national adaptation plans are implemented. Adapting to climate change will entail adjustments and changes at every level from community to national and international. Communities must build their resilience, including adopting appropriate technologies while making the most of traditional knowledge, and diversifying their livelihoods to cope with current and future climate stress. Local coping strategies and knowledge need to be used in synergy with government and local interventions. The need of adaptation interventions depends on national circumstances. There is a large body of knowledge and experience within local communities on coping with climatic variability and extreme weather events. Local communities have always aimed to adapt to variations in their climate. To do so, they have made preparations based on their resources and their knowledge accumulated through experience of past weather patterns. This includes times when they have also been forced to react to and recover from extreme events, such as floods, drought and hurricanes. Local coping strategies are an important element of planning for adaptation. Climate change is leading communities to experience climatic extremes more frequently, as well as new climate conditions and extremes. Traditional knowledge can help to provide efficient, appropriate and time - tested ways of advising and enabling adaptation to climate change in communities who are feeling the effects of climate changes due to global warming.

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18. Given below are the factors of vulnerability of poor people to climate change. Select the code that contains the correct answer.

(a) Their dependence on natural resources

(b) Geographical attributes

(c) Lack of financial resources

(d) Lack of traditional knowledge

Code:

(1) (a), (b) and (c)

(2) (b), (c) and (d)

(3) (a), (b), (c) and (d)

(4) (c) only

Answer: 1

19. Adaptation as a process enables societies to cope with:
(a) An uncertain future

(b) Adjustments and changes

(c) Negative impact of climate change

(d) Positive impact of climate change

Select the most appropriate answer from the following code:
(1) (a), (b), (c) and (d)

(2) (a) and (c)

(3) (b), (c) and (d)

(4) (c) only

Answer: 1

20. To address the challenge of climate change, developing countries urgently require:
(1) Imposition of climate change tax

(2) Implementation of national adaptation policy at their level

(3) Adoption of short-term plans

(4) Adoption of technological solutions

Answer: 2

21. The traditional knowledge should be used through:
(1) Its dissemination

(2) Improvement in national circumstances

(3) Synergy between government and local interventions

(4) Modern technology

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Answer: 3

22. The main focus of the passage is on:
(1) Combining traditional knowledge with appropriate technology

(2) Co-ordination between regional and national efforts

(3) Adaptation to climate change

(4) Social dimensions of climate change

Answer: 3

Read the following passage carefully and answer questions from 23 to 27:
If India has to develop her internal strengths, the nation has to focus on the technological imperatives, keeping in mind three dynamic dimensions: the people, the overall economy and the strategic interests. These technological imperatives also take into account a 'fourth' dimension, time, an offshoot of modern day dynamism in business, trade, and technology that leads to continually shifting targets. We believe that technological strengths are especially crucial in dealing with this fourth dimension underlying continuous change in the aspirations of the people, the economy in the global context, and the strategic interests. The progress of technology lies at the heart of human history. Technological strengths are the key to creating more productive employment in an increasingly competitive market place and to continually upgrade human skills. Without a pervasive use of technologies, we cannot achieve overall development of our people in the years to come. The direct linkages of technology to the nation's strategic strengths are becoming more and more clear, especially since 1990s. India's own strength in a number of core areas still puts it in a position of reasonable strength in geo-political context. Any nation aspiring to become a developed one needs to have strengths in various strategic technologies and also the ability to continually upgrade them through its own creative strengths. For people-oriented actions as well, whether for the creation of large scale productive employment or for ensuring nutritional and health security for people, or for better living conditions, technology is the only vital input. The absence of greater technological impetus could lead to lower productivity and wastage of precious natural resources. Activities with low productivity or low value addition, in the final analysis hurt the poorest most. The technological imperatives to lift our people to a new life, and to a life they are entitled to is important. India, aspiring to become a major economic power in terms of trade and increase in GDP, cannot succeed on the strength of turnkey projects designed and built abroad or only through large-scale imports of plant machinery, equipment and know how. Even while being alive to the short-term realities, medium and long-term strategies to develop core technological strengths within our industry are vital for envisioning a developed India.

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23. According to the above passage, which of the following are indicative of the fourth dimension?
(a) Aspirations of people

(b) Modern day dynamism

(c) Economy in the global context

(d) Strategic interests

Code:
(1) (a), (b) and (c) only

(2) (b), (c) and (d) only

(3) (a), (c) and (d) only

(4) (a), (b) and (d) only

Answer: 3

24. More productive employment demands:
(1) Pervasive use of technology

(2) Limiting competitive market place

(3) Geo-political considerations

(4) Large industries

Answer: 1

25. Absence of technology would lead to:
(a) Less pollution

(b) Wastage of precious natural resources

(c) Low value addition

(d) Hurting the poorest most

Code:
(1) (a), (b) and (c) only

(2) (b), (c) and (d) only

(3) (a), (b) and (d) only

(4) (a), (c) and (d) only

Answer: 2

26. The advantage of technological inputs would result in:
(1) Unbridled technological growth

(2) Importing plant machinery

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(3) Sidelining environmental issues

(4) Lifting our people to a life of dignity

Answer: 4

27. Envisioning a developed India requires:
(1) Aspiration to become a major economic player

(2) Dependence upon projects designed abroad

(3) Focus on short-term projects

(4) Development of core technological strengths

Answer: 4

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COMMUNICATION

Meaning of Communication

The term communication is derived from the Latin word “communis” or “communicare” which means to make common. Thus communication means to make common facts, information’s, thoughts and requirements. Communication therefore is the exchange of thoughts, message, information etc. by way of speech, signal or in writing. Communication is a two-way process and works well with feedback, this helps to confirm that intended message has been successful.

Scholar Definition of communication

In order to understand further, many scholars have defined the term such as
“Communication is the sum of all things, one person does when he wants to create understanding in the minds of another. It involves a systematic and continuous process of telling, listening and understanding.”
– Allen Louis
Communication has been defined “As the transfer of information from one person to another whether or not it elicits confidence.”
– Koontz and O’ Donell
“Communication is an exchange of facts, ideas, opinions or emotions by two or more persons.”
– George Terry
“Communication is the process by which information is transmitted between individuals and/or organization so that an understanding response results”.
– By Peter Little
“Communication is an exchange of facts, ideas, opinions or emotions by two or more persons”.
– By W.H. New man and C.F. summer Jr.

Communication is effective when a concise and clear message is delivered well, received successfully and understand fully. The process of communication has the following distinct components:
Communication begins with an impulse (or motivation) to pass on a message made up of bits of information. In the process of encoding, units of information are selected and organized for transmission. Input is the sum of experiences that build up in the human brain or computer.
The output is the encoded message transmitted by the information source (an individual person or group of people). The interpretation of the message is referred to as decoding.

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Feedback is the response or message that the recipient (decoder) returns to the sender (encoder).

- The sender has an idea
- Sender encodes the idea
- The sender transmits the message through a medium
- The receiver gets the message
- The receiver decodes the message
- Receiver sends feedback

Feedback in the communication process is the response that gives us some indication of how effectively we communicate. It is the gauge of efficiency in communication

TYPES AND CHARACTERISTICS OF COMMUNICATION

Based on whom the message is addressed

We classify communication according to the number of persons (receivers) to whom the message is addressed:

- **Intrapersonal Communication:** It is talking to oneself in one's own mind. Examples are soliloquies or asides in dramatic works.
- **Interpersonal Communication**: It is the exchange of messages between two persons. For example, a conversation, dialogue or an interview in which two persons interact (others may also be present as the audience). An author communicates interpersonally with his reader, who is always present as a silent audience in the author's mind while he writes. A letter too is an example of interpersonal communication between the writer and the person to whom it is written.
- **Group Communication:** It can be among small or large groups, like an organization, club or classroom, in which all individuals retain their individual identity.
- **Mass Communication:** It occurs when the message is sent to large groups of people, for example, by newspaper, radio, or television. In this process, each person becomes a faceless individual with almost no opportunity for personal response or feedback.

Based On the basis of the medium employed

Verbal Communication: It means communicating with words, written or spoken. Verbal communication consists of speaking, listening, writing, reading, and thinking. It may further be classified as Oral or Written Communication.

Non-verbal communication:

It includes using of pictures, signs, gestures, and facial expressions for exchanging information between persons. It is done through sign language, action language, or object Language. Non-verbal communication flows through all acts of speaking or writing. It is a Wordless message conveyed through gestures (sign), movements (action language), and Object language (pictures/clothes) and so on. Further non-verbal communication can be Identified by personal space (proxemics), sense of smell (olfactics) and time (chronemics).

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Meta Communication:

Here the speaker's choice of words unintentionally communicates something more than what the actual words state. For example, a flattering remark like "I've never seen you so smartly dressed" could also mean that the regular attire of the listener needed improvement.
Formal Communication: A formal channel of communication can be defined as a means of communication that is formally controlled by managers or people occupying positions in an organization. The communication flows through formal channels, that is, officially recognized positions along the line in the organization. This ensures that the information flows orderly, timely, and accurately. Any information, decision, memo, reminder etc. will follow this path.

Informal Communication:

Side by side with the formal channel of communication every organization has an equally effective channel of communication that is the informal channel. It is not officially sanctioned, and quite often it is even discouraged or looked down upon. But, then, it is very much there and has been given the name 'grapevine' precisely because it
Runs in all directions-horizontal, vertical, diagonal. As the management experts put it, "it flows around water coolers, down hallways, through lunch rooms, and wherever people get together in groups".

Downward Communication:

The Communication that flows from Top to Bottom is known as downward communication. Any organization has an inbuilt hierarchical system, and in that, in the first instance, communication invariably flows downwards.

Upward Communication:

The Communication that flows from bottom to top, which is from lower hierarchical level to Higher level is called Upward Communication. The main function of upward communication Is to supply information to the upper levels about what is happening at the lower levels. It is Just the reverse of the previous dimension

Lateral Communication:

When communication takes place between two or more persons who are subordinates Working under the same person or those who are working on the same level, it is called Lateral or horizontal communication. A good example of this kind of communication is that Between functional managers. It is necessary for the reviewing of the activities assigned to Various subordinates having identical positions

Diagonal Communication:

Diagonal or Crosswise communication includes the flow of information among persons at Different levels who have no direct reporting relationships. As an example, the Communication between the Training Supervisor and Marketing Manager, regarding the Training of a few

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employees of the Marketing Department, is Diagonal Communication. This kind of communication is used to speed up information flow, to improve understanding, and to coordinate efforts for the achievement of organizational objectives.

Characteristics of communication

- It involved two persons
- Message is must
- Communication May be Written, Oral or Gestural:
- Communication is a Two Way Process
- Its Primary Purpose is to Motivate a Response
- Communication may be Formal or Informal
- It Flows Up and Down and also from Side to Side
- It is an Integral Part of the Process of Exchange

Objectives/Purpose of Communication

The objectives of communication are dynamic and ever-changing. Some of the common objectives of official communication are to get or give information, to ask for or give instructions or advice or suggestions, to make requests, to persuade other people to agree with us. Sometimes, we communicate with the intention of complaining, or warning; but unfortunately, we do this angrily and get into arguments. If we learn to complain and warn in an acceptable and constructive manner, our serious intention can be conveyed quite effectively without damaging relationships.
In order to caution, counsel, clarify, apprise, evaluate, reprimand, and organize and numerous such objectives, we make use of communication.

Evaluation of Communication Effectiveness

Communication is not an end in itself; rather it is a means to attain other ends or goals. Hence, it has to be effective to be able to attain these goals or objectives. Communication effectiveness can be examined in relation to the following criteria:

- Fidelity of Communication: the distortion free quality of a message is called fidelity. An effective person gets the message across to others with minimal possibilities of misunderstanding.
- Economy: In an effective communication a minimum of energy time, symbols and cues are used to encode message without losing its fidelity and impact.
- Congruence: An effective communication integrates both verbal and non-verbal cues.

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- Influence: The most important criterion of effectiveness is the influence that the communicator is able to exercise over the receiver of the communication. Influence means the communicator achieve the results he intended.
- Relationship Building: effective communication contributes to the building of trust and a better relationship between the source and the target.

Seven C's of Effective Communication

- Completeness
- Conciseness
- Consideration
- Clarity
- Concreteness
- Courtesy
- Correctness

Four S's of Communication

- *Shortness*
- *Simplicity*
- *Strength*
- *Sincerity*

Types of Communication Barriers

Semantic barriers

This barrier is related to the process of coding and decoding the message. Various types of semantic gaps found in day-to-day use of people are as follows:

- Words having similar pronunciation but multiple meaning: Same pronunciation but are having many meanings. For example: sight, site, cite.
- Badly expressed message: Lack of clarity and precision make the message badly expressed. Lacks of coherence, awkward sentence structure, jargons etc. are common faults, which lead to such messages.
- Wrong interpretation: Whenever one interprets a symbol, his understanding may differ with others. The Hindi word 'kaka' means uncle in one part of the country but small boy in another part of the country.
- Technical Language: When technical language is used in the communication process, it creates barriers in understanding the message in the same sense and in the same spirit. When technical jargons or specialist languages are used in the communication and conversation process, they create tension, confusion and misunderstanding between the sender and the receiver.

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- New meanings given to ordinary words by computer technology; to people who are not familiar with computers, “mouse” is only an animal, where as in computer jargon, it is a device.

Organizational Barriers

It may originate in contradictory management policies, or too many levels of management or the clash between line and staff operations. The specialized nature of functions or even the special language of those functions may cause it. It may have its source in formal informal, or grapevine transactions. Following are the organizational barriers in communication:

- **Organization culture and climate:** In every organization, there exists a unique culture and climate. The climate and culture of an organization ultimately influence the freedom, thrust and interaction pattern among people in an organization.
- **Organizational rules and regulations:** The rules and regulations of the organization vary widely from one organization to another. They may be so rigid that they may influence the flow of information in a wrong direction.
- **Status relationships:** The status, power and position relationship acts as the hurdle in the effectiveness of communications. Individuals may not be able to say what they wish to say because of their fear for the position and power of the other party in the communication process. The complex hierarchical structure of the organization like too tall or too much of divisionalisation of the organization may not facilitate the free flow of communication.
- **Lack of cooperation between superior and subordinate:** There may not be proper cooperation between the superior and subordinate for various personal or organizational relationships, which may held to improper communication in an organization.

Interpersonal Barriers

The effectiveness of Communication depends a lot on the interpersonal relationship between two people. If and when the sender and receiver are at the same economic, educational and status level and also have good rapport with each other, there is hardly any barrier arising in communication. But, in case of a difference at any level, there is a greater chance of Miscommunication. The most common example for this in an organization is the Barriers relating to Superior and Subordinate. The subordinate must follow the order of the superior, carry out all work efficiently, and provide full information related to any matter, which arises in the organization or in any work. Moreover, the superior should have full confidence in himself and the subordinate.

1. Lack of proper channel: There may be complexity in the organizational structure, which may influence proper and effective communication from the subordinate. They may not feel free to communicate because of the pressure of position power and authority.
2. No interest to communicate: There may not be any interest on the part of subordinates to have a dialogue, discussion and interaction with their superiors, which affect the communication process adversely.

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3. Lack of cooperation: lack of cooperation and mutual understanding also leads to the hiding of certain information between the superior and subordinates in the organization.
4. Lack of trust: There may be lack of trust and coordination between the superior and the subordinate, which may lead to infective communication.
5. The poor relationship between superior and subordinate: A good relationship must develop between superiors and subordinates frequently and freely. They must interact to improve the upward and downward communication system. The superior must listen to the subordinates' suggestion, their problems, and must have faith in them. In the absence of all this, it may so happen that what the superior speaks, the subordinate may not understand it.
6. Fear of penalty: If subordinate fees that because of free expression and upward communication he will face some type of penalty, there is a possibility that he may not provide a full or correct message to the superior.

Individual / Psycho-sociological Barriers:

Individual or Psycho-sociological barriers are the prime barriers in interpersonal communication. People have different styles of communication. People also have personal feelings, desires, fears, hopes, likes, dislikes, attitudes, views and opinions. The meaning assigned to a message depends upon the emotional or psychological status of both the parties involved in the process of communication.

1. Style
2. Selective perception: The receiver may make a world of his own around himself. He projects his interest and expectations as he decodes messages. He may only take that much piece of information, which may suit his world of thinking. As a result, the person acquires incomplete and inappropriate information, which influence the communication process. Having a poor self-concept or self-understanding, or a poor understanding of other can cause perceptual distortions.
3. Halo effect: People do not listen carefully because of impressions based on earlier encounters. Even one of the parties having a halo effect will disrupt the flow of communication.
4. Status relationship
5. Poor attention and Retention
6. Inattention
7. Undue importance of written words
8. Defensiveness
9. Closed Mind
10. State of Health
11. Filtering: Filtering is the process of reducing the details or aspects of a message. Each person who receives the message reduces it according to his or her understanding of the situation. In this process, much of the important information may be lost or misinterpreted and the sender will fail to convey what he wants to convey.

Cross-Cultural/ Geographic Barriers:

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Culture is a shared set of values and attributes of a group; it is the sum total of the ways of living built up by a group and transmitted from one generation to another. Culture is so much a part of an individual's manner of talking, behaving and thinking, that communication style and competence are influenced by it.
Some of the significant differences between cultures are:

- National Character/ Basic Personality.
- Language
- Values and norms of behavior
- Social relationships
- Concepts of time
- Concepts of space
- Nonverbal communication
- Perception

Physical Barriers/ Channel and Media Barriers

Physical distractions cause a lot of noise, often literally: insufficiently insulated rooms with car noises filtering through, poor lighting, and such things as frequent movement of bodies postures, with a pen in the hand, even the arrival of coffee at a critical stage on the communication process are the causes of communication barriers in organizations. Constant telephone interruptions are one of the commonest physical distractions. These obstacles prevent a message from reaching the intended recipient. The following obstacles are considered under this category:

- Noise
- Defects in the Medium

TECHNICAL ASPECTS IN COMMUNICATION BARRIERS

A few technical aspects in communication barriers are briefly narrated by Murphy's Law on Communication: Following are the basics in this law on communication:

- Communication usually fails. Except by chance, it succeeds. On account of various barriers, the possibility of success in the flow of communication is rare.
- If the message can be understood, in different ways, it will be understood in just the way that does the most harm. People receive the massage in their own way. In most of the cases, the most harmful side of communication is considered.
- It refers to the sender manipulating information so that the receiver will see it as more favorable. In organizations, the information is condensed and synthesized. Objective information does not reach to the authority. The more the vertical levels in the organization's hierarchy, the more opportunities there are for filtering.
- Meta communication. In a communication apart from the message, there is a Meta message. Meta message exists in the people's minds because of their actions such as being hard to contact. It is the most important thing in seat word language.
- Noise in communication process. Noise can enter the communication process because of situational factors. It is one of the factors influencing the communication process. Noise is mostly related to mechanical distractions. A few noise distractions are as

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follows: (i) Human sounds, (ii) Traffic, (iii) Telephone instruments (iv) Channel defects (v) Birds (vi) Trees (vii) Fans (viii) Chalk writing (ix) Use of Duster (x) Projector and (xi) Nasal Voice

OVERCOMING THE BARRIERS IN COMMUNICATION

Constant effort is required to overcome the barriers which unconsciously creep up in the process of Communication. Barriers can be overcome if sufficient effort is put into the communication process and it is desired that communication be effective and efficient. One way of reducing the effects of these barriers is to check continuously during the communication process what the massage really is. The actions to be taken by the Sender, Receiver and together the two of them, to achieve this are listed below:

Sender: The sender should be clear about the following Ws and H:

- WHO To who should the message go?
- WHY Why should I communicate? What are the motives?
- WHAT decide what to communicate? Be clear about what one needs to communicate.
- WHEN the best time for optimum reception is chosen.
- HOW Use a language, which the receiver will understand and which is unambiguous.
- WHERE: Choose a location which will not interfere with the reception, understanding and acceptance of the message: Privately? Home or away? In a group? At work or outside?

Receiver: The receiver can be aware about the following, to overcome the barriers:

- Be fully attentive to sender.
- Listen actively to the message being sent.
- Ask for clarification and repetition wherever necessary.
- Keep checking the receipt of information with sender.

Both: Receiver and Sender can make the Communication Flawless if they:

- Realize that misunderstandings are bound to occur, and be alert for all cues to this effect.
- Listen, listen, listen, and listen again.
- Share opinions, feelings and perceptions generated by the me

Mass Communication & mass media

Outside the realm of interpersonal communication exists another form of communication, which involves communication with mass audiences and hence the name mass communication; and the channels through which this kind of communication takes place are referred to as mass media.

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Mass communication is the term used to describe the academic study of various means by which individuals and entities relay information to large segments of the population all at once through mass media.

It is observed that the term mass communication must have at least five aspects:

Large audience
Fairly undifferentiated audience composition
Some form of message reproduction
Rapid distribution and delivery
Low cost to the consumers

Characteristics of Mass communication:

Anonymous
Large audience
Fairly undifferentiated audience composition
Some form of message reproduction
Rapid distribution and delivery
Low cost to the consumers
Directs messages toward relatively large, heterogeneous and anonymous audience.
Messages are transmitted publicly no privacy.
Short duration message for immediate consumption
Feedback is indirect, non-existent or delayed
Cost per exposure per individual is minimum
Source belongs to organization or institutions
Mostly one way

Types of mass media

- Traditional media
- Print media
- Electronic media
- Social media

Functions of mass media

In a society like ours, mass media have a responsible role to play in fostering democracy, plurality and communal harmony through the functions listed below.

- Information and education.
- Socialization
- Entertainment
- Political awareness
- Cultural transmission

Importance of Mass media

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-Pervasiveness of Mass Media
-Mass Communication Informs
-Mass Media Entertains
-Mass Communication Persuades
-Mass Communication Binds

QUESTIONS

1. Differentiation between acceptance and non-acceptance of certain stimuli in classroom communication is the basis of :
(1) selective expectation of performance
(2) selective affiliation to peer groups
(3) selective attention
(4) selective morality
Answer: (4)

2. Assertion (A) : The initial messages to students in the classroom by a teacher need not be critical to establish interactions later.
Reason (R) : More control over the communication process means more control over what the students are learning.
Code :
(1) Both (A) and (R) are true, and (R) is the correct explanation of (A).
(2) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
(3) (A) is true, but (R) is false.
(4) (A) is false, but (R) is true.
Answer: (3)

3. Assertion (A) : To communicate well in the classroom is a natural ability.
Reason (R) : Effective teaching in the classroom demands knowledge of the communication process.
Code :
(1) Both (A) and (R) are true, and (R) is the correct explanation of (A).
(2) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
(3) (A) is true, but (R) is false.
(4) (A) is false, but (R) is true
Answer: (4)

4. Assertion (A) : Classroom communication is a transactional process.
Reason (R) : A teacher does not operate under the assumption that students' responses are purposive.
Select the correct code for your answer :
(1) Both (A) and (R) are true, and (R) is the correct explanation of (A).
(2) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
(3) (A) is true, but (R) is false.
(4) (A) is false, but (R) is true.
Answer: (1)

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5. Which of the following set of statements is correct for describing the human communication process ?
(a) Non-verbal communication can stimulate ideas.
(b) Communication is a learnt ability.
(c) Communication is not a universal panacea.
(d) Communication cannot break-down.
(e) More communication means more effective learning by students.
(f) Value of what is learnt through classroom communication is not an issue for students.
Code :
(1) (a), (c), (e) and (f)
(2) (b), (d), (e) and (f)
(3) (a), (b), (c) and (d)
(4) (a), (d), (e) and (f)
Answer: (4)
6. The classroom communication should essentially be :
(1) Contrived
(2) Empathetic
(3) Abstract
(4) Non-descriptive
Answer: (2)

7. A good communicator begins his/her presentation with a :
(1) Complex question
(2) Non-sequitur
(3) Repetitive phrase
(4) Ice-breaker
Answer: (4)

8. In a classroom, the probability of message reception can be enhanced by :
(1) Establishing a viewpoint
(2) Exposing the ignorance of students
(3) Increasing the information load
(4) Using high decibel audio tools
Answer: (1)

9. Effective communication pre-supposes
(1) Non-alignment
(2) Domination
(3) Passivity
(4) Understanding
Answer: (4)

10. When verbal and non-verbal messages are contradictory, it is said that most people believe in
(1) indeterminate messages
(2) verbal messages
(3) non-verbal messages
(4) aggressive messages
Answer: (3)

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11. The typical feature of an information-rich classroom lecture is in the nature of being
(1) Sedentary
(2) Staggered
(3) Factual
(4) Sectoral
Answer: (3)

12. Expressive communication is driven by
(1) Passive aggression
(2) Encoder's personality characteristics
(3) External clues
(4) Encoder-decoder contract
Answer: (4)
13. Positive classroom communication leads to
(1) Coercion
(2) Submission
(3) Confrontation
(4) Persuasion
Answer: (4)

14. Classroom communication is the basis of
(1) Social identity
(2) External inanities
(3) Biased passivity
(4) Group aggression
Answer: (1)

15. Imagine you are working in an educational institution where people are of equal status. Which method of communication is best suited and normally employed in such a context ?
(1) Horizonatal Communication
(2) Vertical communication
(3) Corporate communication
(4) Cross communication
Answer: (1)

16. Identify the important element a teacher has to take cognizance of while addressing students in a classroom.
(1) Avoidance of proximity
2) Voice modulation
(3) Repetitive pause
(4) Fixed posture
Answer: (2)

17. What are the barriers to effective communication ?
(1) Moralising, being judgemental and comments of consolation.
(2) Dialogue, summary and self-review.
(3) Use of simple words, cool reaction and defensive attitude.
(4) Personal statements, eye contact and simple narration.

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Answer: (1)

18. The choice of communication partners is in_uenced by factors of
1) Proximity, utility, loneliness
(2) Utility, secrecy, dissonance
(3) Secrecy, dissonance, deception
(4) Dissimilarity, dissonance, deviance
Answer: (1)

19. As a teacher, select the best option to ensure your effective presence in the classroom.
(1) Use of peer command
(2) Making aggressive statements
(3) Adoption of well-established posture
(4) Being authoritarian
Answer: 3

20. Every communicator has to experience
(1) Manipulated emotions
(2) Anticipatory excitement
(3) The issue of homophiles
(4) Status dislocation
Answer: (2)

21. The main objectives of student evaluation of teachers are :
(a) To gather information about student weaknc
(b) To make teachers take teaching seriously.
(c) To help teachers adopt innovative methods of leaching.
(d) To identify the areas of further improvement in teacher traits.
Identify the correct answer from the codes given below :
(1) (a) and (b) only
(2) (b), (c) and (d) only
(3) (a), (b) and (c) only
(4) (a) only
Answer: (3)

22. Using the central point of the classroom communication as the beginning of a dynamic pattern of ideas is referred to as :
(1) Systemisation
(2) Problem – orientation
(3) Idea protocol
(4) Mind mapping
Answer: (4)

23. Aspects of the voice, other than the speech are known as :
(1) Physical language
(2) Personal language
(3) Para language
(4) Delivery language
Answer: (3)

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24. Every type of communication is affected by its :
(1) Reception
(2) Transmission
(3) Non-regulation
(4) Context
Answer: (4)

25. Attitudes, actions and appearances in the context of classroom communication are considered as :
(1) Verbal
(2) Non-verbal
(3) Impersonal
(4) Irrational
Answer: (2)

26. Most often, the teacher – student communication is :
(1) Spurious
(2) Critical
(3) Utilitarian
(4) Confrontational
Answer-3

27. In a classroom, a communicator's trust level is determined by :
(1) the use of hyperbole
(2) the change of voice level
(3) the use of abstract concepts
(4) eye contact
Answer-4

28. Effectiveness of communication can be traced from which of the following ?
(a) Attitude surveys
(b) Performance records
(c) Students attendance
(d) Selection of communication channel
Select the correct answer from the codes given below:
(1) (a), (b), (c) and (d)
(2) (a), (b) and (c)
(3) (b), (c) and (d)
(4) (a), (b) and (d)
Answer: (2)

29. Assertion (A) : Formal communication tends to be fast and _exible.
Reason (R) : Formal communication is a systematic and orderly _ow of information.
(1) Both (A) and (R) are correct and (R) is correct explanation of (A)
(2) Both (A) and (R) are correct, but (R) is not correct explanation of (A)
(3) (A) is correct but, (R) is false
4) (A) is false but, (R) is correct
Answer: (4)

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30. Which of the following are the characteristic features of communication ?
(a) Communication involves exchange of ideas, facts and opinions.
(b) Communication involves both information and understanding.
(c) Communication is a continuous process.
(d) Communication is a circular process.
Select the correct answer from the codes given below :
(1) (a), (b) and (c)
(2) (a), (b) and (d)
(3) (b), (c) and (d)
4) (a), (b), (c) and (d)
Answer: (4)

31. The term 'grapevine' is also known as :
(1) Downward communication
2) Informal communication
(3) Upward communication
(4) Horizontal communication
Answer: (2)

32. Which of the following is not a principle of effective communication ?
(1) Persuasive and convincing dialogue
(2) Participation of the audience
(3) One-way transfer of information
(4) Strategic use of grapevine
Answer: (3)

33. In communication, the language is :
(1) The verbal code
(2) Intrapersonal
(3) The symbolic code
(4) The non-verbal code
Answer: (1)

34. When academicians are called to deliver lecture or presentation to an audience on certain topics or a set of topics of educational nature, it is called
(A) Training Program
(B) Seminar
(C) Workshop
(D) Symposium
Answer: (B)

35. Media is known as
(A) First Estate
(B) Second Estate
(C) Third Estate
(D) Fourth Estate
Answer: (C)

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36. The mode of communication that involves a single source transmitting information to a large number of receivers simultaneously, is called
(A) Group Communication
(B) Mass Communication
(C) Intrapersonal Communication
(D) Interpersonal Communication
Answer: (B)

37. A smart classroom is a teaching space which has
(i) Smart portion with a touch panel control system.
(ii) PC/Laptop connection and DVD/VCR player.
(iii) Document camera and specialized software
(iv) Projector and screen Select the correct answer from the codes given below :
(A) (i) and (ii) only
(B) (ii) and (iv) only
(C) (i). (ii) and (iii) only
(D) (i).(ii),(iii)and(iv)
Answer: (D)

38. The term 'Yellow Journalism' refers to
(A) sensational news about terrorism and violence
(B) sensationalism and exaggeration to attract readers / viewers.
(C) sensational news about arts and culture
(D) sensational news prints in yellow paper.
Answer: (B)

39. In the classroom, the teacher sends the message either as words or images. The students are really
(A) Encoders
(B) Decoders
(C) Agitators
(D) Propagators
Answer: (B)

40. The next term in the series :
AB, ED, IH, NM, is
(A) TS
(B) ST
(C) TU
(D) SU
Answer: (A)

41. In circular communication, the encoder becomes a decoder when there is
(A) noise
(B) audience
(C) criticality
(D) feedback
Answer: (D)

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42. Break-down in verbal communication is described as
(A) Short circuit
(B) Contradiction
(C) Unevenness
(D)Entropy
Answer: (C)

43. The Telephone Model of Communication was _rst developed in the area of
(A) Technological theory
(B) Dispersion theory
(C) Minimal effects theory
(D)Information theory
Answer: (D)

44. Users who use media for their own ends are identi_ed as
(A) Passive audience
(B) Active audience
(C) Positive audience
(D) Negative audience
Answer: (B)

45. Classroom communication can be described as
(A) Exploration
(B) Institutionalisation
(C) Unsigni_ed
(D) Discourse
Answer: (D)

46. Ideological codes shape our collective
(A) Productions
(B) Perceptions
(C) Consumptions
(D) Creations

47. In communication, myths but are have power
(A) uncultural.
(B) insigni_cant.
(C) imprecise.
(D) unpreferred
Answer: (C)

48. The first multi- lingual news agency of India was
(A) Samachar
(B) API
C) Hindustan Samachar
(D) Samachar Bharati
Answer: (C)

49. Organisational communication can also be equated with

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(A) intra-personal communication.
(B) inter-personal communication.
(C) group communication.
(D) mass communication.
Answer: (C)

50. In the process of Communication, which one Of the following is in the chronological order ?
(A) Communication, Medium, Receiver, Effect, Message
(B) Medium, Communicator, Message, Receiver, Effect
(C) Communicator, Message, Medium, Receiver, Effect
(D) Message, Communicator, Medium, Receiver, Effect
Answer: (C)

51. Communication via New media such as computers, teleshopping, internet and mobile telephony is termed as
(A) Entertainment
(B) Interactive Communication
(C) Development Communication
(D) Communitarian
Answer: (B)

52. Classroom communication of a teacher rest on the principle of
(A) Infotainment
(B) Edutainment
(C) Entertainment
(D) Enlightenment
Answer: (B)

53. _____ is important when a teacher communicates with his / her student
(A) Sympathy
(B) Empathy
(C) Apathy
(D) Antipathy
Answer: (B)

54. Classroom communication must be
(A) Teacher centric
(B) Student centric
(C) General centric
(D) Textbook centric
Answer: (B)

55. “Spare the rod and spoil the child”, gives the message that
(A) punishment in the class should be banned.
(B) corporal punishment is not acceptable.
(C) undesirable behaviour must be punished.
(D) children should be beaten with rods.
Answer: (C)

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56. The type of communication that the teacher has in the classroom, is termed as
(A) Interpersonal
(B) Mass communication
(C) Group communication
(D) Face-to-face communication
Answer: (C)

57. Video-Conferencing can be classi_ed as one of the following types of communication
(A) Visual one way
(B) Audio-Visual one way
(C) Audio-Visual two way
(D) Visual two way
Answer: (C)

58. MC National University of Journalism and Communication is located at
(A) Lucknow B) Bhopal (C) Chennai (D) Mumbai
Answer: (B)

59. In India for broadcasting TV programmes which system is followed?
(A) NTCS (B) PAL(C) NTSE (D) SECAM
Answer: (B)

60. The term 'DAVP' stands for
(A) Directorate of Advertising & Vocal Publicity
(B) Division of Audio-Visual Publicity
(C) Department of Audio-Visual Publicity
(D) Directorate of Advertising & Visual Publicity
Answer: (D)

61. The term "TRP" is associated with TV shows stands for
(A) Total Rating Points
(B) Time Rating Points
(C) Thematic Rating Points
(D) Television Rating Points
Answer: (A)

62. Photo bleeding means
(A) Photo cropping
(B) Photo placement
(C) Photo cutting
(D) Photo colour adjustment
Answer: (D)

63. While designing communication strategy feed-forward studies are conducted by
(A) Audience
(B) Communicator
(C) Satellite

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(D) Media
Answer: (B)

64. In which language the newspapers have highest circulation ?
(A) English B) Hindi(C) Bengali (D) Tamil

65. Communication with oneself is known as
(A) Organisational Communication
(B) Grapewine Communication
(C) Interpersonal Communication
(D) Intrapersonal Communication
Answer: (D)

66. The term 'SITE' stands for
(A) Satellite Indian Television Experiment
(B) Satellite International Television Experiment
(C) Satellite Instructional Television Experiment
(D) Satellite Instructional Teachers Education
Answer: (C)

67. Public communication tends to occur within a more
(A) complex structure
(B) political structure
(C) convenient structure
(D) formal structure
Answer: (D)

68. Transforming thoughts, ideas and messages into verbal and non-verbal signs is referred to as
(A) channelisation
(B) mediation
(C) encoding
(D) decoding

69. Effective communication needs a supportive
(A) economic environment
(B) political environment
C) social environment
(D) multi-cultural environment
Answer: (C)

70. A major barrier in the transmission of cognitive data in the process of communication is an individual's
(A) personality (B) expectation (C) social status D) coding ability
Answer: (D)

71. When communicated, institutionalized stereotypes become
(A) myths (B) reasons (C) experiences D) convictions
Answer: (D)

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72. In mass communication, selective perception is dependent on the receiver's
(A) competence (B) pre-disposition C) receptivity(D) ethnicity
Answer: (C)

73. Media that exist in an interconnected series of communication – points are referred to as
A) Networked media
(B) Connective media
(C) Nodal media
(D) Multimedia
Answer: (A)

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Mathematical Reasoning and Aptitude

Topic to be Covered from UGC NET REASONING SYLLABUS

- Number series
- letter series
- codes
- relationships

Number series

Questions on number series are prevalent in most of the exams. Almost 1-2 Questions comes in exam from this topic.

- These questions are based on numerical sequences that follow a logical rule/ pattern based on elementary arithmetic concepts.
- A particular series is given from which the pattern must be analysed. You are then asked to predict the next number in the sequence following the same rule
- There are some numbers are wrongly put into the series of number and you need to identify or correct them

Tips and Tricks for Number series for NTA NET EXAM

- Number series questions are mostly numbers in the series are connected to each other. When you identify the connection, solving the question becomes easier for you.
- Identify the pattern asked in the question. Once you identify the pattern, solving the questions would be much easier.
- Once you have identified the pattern, apply it to the number before/ after the missing number in the series to get the answer.
- Try to analyse the given pattern such as prime numbers, perfect squares ,cubes, series of known numbers like Mathematics progression (AP/GP) etc.
- Next, if you are unable to find the familiar number :-
- Calculate difference B/W the given series elements
- Then observe the pattern in difference to see are they following any regular pattern or known numbers like said above.
- If the numbers are growing slowly its must be addition or subtraction series
- If the numbers are growing rapidly it might be a Square series or cube or multiplicative series.
- If the difference or sum don't have any particular pattern it must be alternate number series.

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- Now, You need to t signifies that the series follows a complex pattern. Check for cases like multiplying the number and adding/subtracting a constant number from it to reach the pattern.

How to Identify Common Patterns in Number Series

The common patterns asked in number series topic are-

Prime numbers

When numbers in series are prime numbers, which are divisible by own and greater than 1. There must not be any factor of this number. Such numbers are- 11, 13, 17, 19, etc.

Squares/Cubes

When numbers in the series are of perfect square or perfect cube or perfect square roots or cube root. Such numbers include 81, 100, 121, 144, etc. These can be of decimal nature.

Pattern in differences

Calculate the differences between the numbers given in the series provided in the question. This difference can be constant or varying in nature. After identifying this difference, you can find the problem number or words or letters in the problem series.

Example:- 2, 7, 12, 17, 22, ?
The difference in this series for every number is 5. Hence, the next number will be 27.

Example:- A, D, G, J, ?
The difference between the position of these letters is 3. So, The next third letter to J will be M.

Pattern in Alternate numbers

Whenever there is a pattern in the alternate numbers or letters or words in the series, then with this alternate pattern, you can easily find the problem number, letter or word.

Example:- 2, 3, 4, 7, 6, 11, ?
In this series, the alternate numbers are incremented by 2 and 4 successively. Hence, the next number will be 8.

Similar can be done to letter series or word series to find the answer.

Geometric Series

When numbers in the series follow the geometric progression means when each successive number in the series is obtained by multiplying or dividing the previous numbers with a fixed ratio, then problem number can be easily figured out.

Example: 4, 20, 100, 500, ?
Each number is multiplied by 5 and in geometric progression. Hence, the next number will be 2500.

Pattern in the adjacent numbers

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When adjacent numbers are varying with a logical pattern in the series, it can be understood with the following example.

Example: 2, 4, 12, 48,?
In this series, first number is multiplied by 2, second number is multiplied with 3 and third one is with 4. Hence, the next number in series will be 240.

Odd one out
All numbers but one is in the series. Such numbers can be identified for elimination.

Complex Series
In such series, the differences between numbers are dynamic instead of being fixed, but still there is a clear logical rule.

Example: 3, 8, 15, 24, 33, ?
In this series, numbers are incremented by +5, +7, +9 and +11. Hence, the next number will be increment by +13. So, the solution will be 46.

Complex arithmetic functions
In some series, more than one operation (+, x, - and /) is used successively. Such pattern are very tough to recognize and sometime take a lot of time. So, it is advisable not to spend so much time on such questions. If you find the correct answer under the expected time limits, then only attempt it otherwise switch to the next question.

Example: 4, 6, 12, 14, 28, ?
In this series, each prospective number is incremented by 2 and the next number is multiplied by 2. Hence, applying this logic to the series, the next number will be 30.

Letter series

One of the simplest rule to solve alphabetical series problem is EJOTY rule. Most of the times, you need to remember the position of any letter to solve puzzle. EJOTY rules will help you to easily find out the position of different letters in the alphabet.

E	J	O	T	V
5	10	15	20	25

This type of question usually consists of a series of small letters which follow a certain pattern. However some letters are missing from the series. These missing letters are then given in a proper sequence as one of the alternatives. The candidate is required to choose this alternative as the answer.

Letter series classified in three types:

One lettered series

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In **One lettered series** each term contains one letter and follows a certain pattern.

We have to find out the next term according to that pattern.

Example-1: What is the next letter in the series B, F, J, N, _____ ?

1) R

2) T

3) Q

4) S

Answer: 1) R

Explanation:

B = 2, F = 6, J = 10, N = 14 . Here the difference between the letters is 4. So the answer is 14 + 4 = 18 which is R.

Example-2: What is the next letter in the series B, C, E, G, _____ ?

1) J

2) I

3) K

4) M

Answer: - K

Explanation:

B = 2, C = 3, E = 5, G = 7 . Here the letters are consecutive primes. So the next prime number is 11 which is K.

Two lettered series

In **Two lettered series** each term contains two letters and follows a certain pattern. We have to find out the next term according to that pattern.

1) GR

2) GQ

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3) HQ

4) HR

Answer: 2) GQ

Explanation:

C = 3, D = 4, E = 5, F = 6.
M = 13, N = 14, O = 15, P = 16.
So next term is G = 7 and Q = 17

Three lettered series

In Three lettered series each term contains three letters and follows a certain pattern. We have to find out the next term according to that pattern.

Example: What is the next letter in the series CNL, BLI, AJF, ZHC, _____ ?

1) XDY

2) YFZ

3) YFA

4) XFY

Answer: 2) YFZ

Explanation:

C = 3, B = 2, A = 1, Z = 26. (Decreasing by 1) So next letter is 25, which is Y.
N = 14, L = 12, J = 10, H = 8. (Decreasing by 2) So next letter is 6, which is F.
L = 12, I = 9, F = 6, C = 3. (Decreasing by 3) So next letter is 26, which is Z.

CODE

Q.1 If NOTE is coded as OQWI and BOA is coded as CQD, then which of the following is coded as NCWGM?

A MOKEB
BMATER
CCATCH
DMATCH
Correct Option: D

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N O T E
+1 +2 +3 +4
O Q W I

Similarly

B O A
+1 +2 +3
C Q D

So,

M A T C H
+1 +2 +3 +4 +5
N C W G M

Q.2 In a certain code language OFFICE is written as NGGHDD. How is DENOTE written in that code language?

A CDMNSD
B EDONUD
C EPOPUF
D EODND
Correct Option: B

O F F I C E
−1 +1 +1 −1 +1 −1
N G G H D D

Similarly

D E N O T E
+1 −1 +1 −1 +1 −1
E D O N U D

Note: Vowels – 1; Consonants + 1
hence, option B is correct.

Q.3 If "ANANT is code as "BPDRY", then "MANOJ" will be coded as which of the following options

A NDQSO
B NCPSO
C NCQSO
D NCQSP
Correct Option: C
ANANT is coded as BPDRY, here the logic is A+1 = B, N+2 = P, A+3 = D, N+4 = R, T+5 = Y
Hence, code for MANOJ will be, M + 1 = N, A + 2 = C, N + 3 = Q, O + 4 = S, J + S = O i.e. "NCQSO".
Hence, option C is correct.

Q.4 in a certain code language, "YIELD" is written as "YHBGX" and "FORT" is written as "POME". How is "HEIGHT" written in that code language?

A NCDFCG
B NCCECG
C NBCFCG

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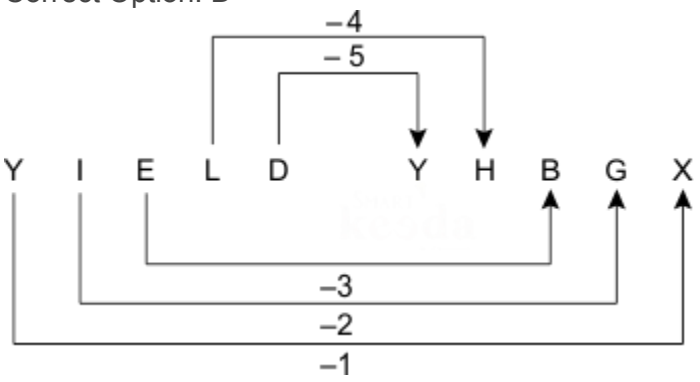
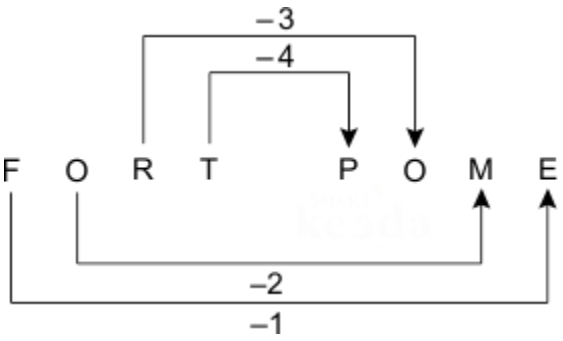
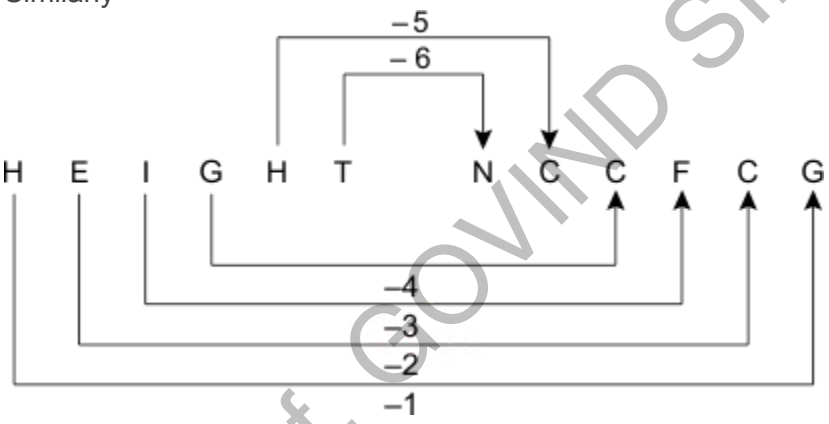
D NCCFCG
Correct Option: D



So,



Similarly



Hence, option D is correct.

Q.5 in a certain code of language, "PREVENT" is written as "TNEVERP". How is "SPECIAL" written in that code language?

ALAICPES
BLAICEPS
CLCAIEPS
DLAEICPS
Correct Option: B
The letters of the word are reversed.

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Hence, option B is correct.

TRICKS TO SOLVE FAMILY OR BLOOD RELATIONS BASED QUESTION

- Blood Relations Based Question are very common in all type of examination where you have been given relationship among few members of the family and based on given details you need to Find out the 'Unknown' relation that exists satisfying the given criteria.
- Questions depict relationships among the various members of a family in a roundabout chain.
- The candidate is expected to find the relation of two particular persons mentioned in the question.
- Generally, the question deals with a hierarchical structure which is based on seven generation three above

Q.1 Pointing to a boy, Saras said, "His father's wife's brother is the only brother of my sister's father." How is the boy related to Saras?

A Son
B Nephew
C Cousin brother
D Uncle
Correct Option: C
Boy's father's wife means his 'mother'.
His mother's brother means his 'maternal uncle'.
Saras' sister's father means Saras' father.
Boy's maternal uncle is the only brother of Saras' father.
Boy's maternal uncle is the paternal uncle of Saras.
This clearly means that the boy is the cousin brother of Saras.

Q,2 Pointing to a boy in a photograph, a girl said, "His father's mother is the mother-in-law of my brother's mother." How is the person in photograph related to the girl?

A Maternal Uncle
B Grandfather
C Brother
D Paternal Uncle
Correct Option: C
Girl's brother's mother means girl's 'mother'.
Mother-in-law of girl's mother means her grandmother.
Mother of the father of the boy in photograph is his 'grandmother'.
So, the boy's grandmother is also girl's grandmother.
This clearly means that the boy is related to the girl as her 'Brother.'

Q.3 pointing to a lady Pankaj Said, Her mother's only grandson is my son, "How is that Lady related to pankaj"?

A Aunt
B Sister
C Mother

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D Wife
Correct Option: B

Q.4 introducing a girl. Ronit said, " He is the daughter of the daughter of my grandfather's only son", How is that girl related to Ronit?

A Cousin
B Niece
C Father in law
D Nephew

Correct Option: B
" He is the daughter of the daughter of my grandfather's only son"
My grandfather's only Son - It means Ronit's father.
Daughter of my grandfather's only son - Ronit's father's daughter. It means Ronit's sister.
Daughter of the daughter of my grandfather - It means Ronit's sister's daughter.
Hence, that girl is a niece of Ronit.
Hence, option B is correct

Q.5 Pointing towards a lady in a photograph a girls says Vinita's grandmother is the mother- in - law of this lady how is the lady in the photograph related to Vinita?

A Mother
B Sister
C Aunt
D Grandmother
Correct Option: A

( )
↓
( ) + ⇔ (Lady)
↓
Vinita

Hence, option A is correct.

Mathematical Aptitude (Fraction, Time & Distance, Ratio, Proportion and Percentage, Profit and Loss, Interest and Discounting, Averages etc.).

1) A person sold a stove for Rs. 423 and incurred a loss of 6%. At what price would it be sold so as to earn a profit of 8%?

a. Rs. 525

b. Rs. 500

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c. Rs. 490

d. Rs. 486

ANSWER: Rs. 486

Explanation:

> **Tip:**
> If **loss is A%,** then **Selling Price = (100 - A)% of cost price**

$$\text{Selling Price} = \text{Rs. } 423 = (100\text{-}6)\% \text{ of CP} = \frac{94\,CP}{100}$$

$$\therefore \textbf{CP} = \textbf{Rs. } \frac{423 \times 100}{94}$$

Now profit should be 8%

> **Tip:**
> If **gain is A%,** then **Selling Price = (100+A)% of cost price**

$$\textbf{Selling Price} = (100+8)\% \text{ of Rs. } \frac{423 \times 100}{94} = \frac{108}{100} \times \frac{423 \times 100}{94}$$

$$\therefore \textbf{SP} = 54 \times \frac{423}{47} = 54 \times 9 = \textbf{Rs. 486}$$

2) A fruit seller buys lemons at 2 for a rupee and sells then at 5 for three rupees. His gain percent is

a. 10%

b. 15%

c. 20%

d. 25%

Answer Explanation

ANSWER: 20%

Explanation:

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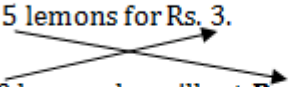
Seller buys 2 lemons for one rupee.
So how much can he buy in say **Rs. 10**
He will get 2 x 10 = 20 lemons in **Rs. 10 = Cost price**
He sells 5 lemons for Rs. 3.



So for 20 lemons he will get **Rs. ?**

$\therefore ? = \frac{20 \times 5}{3} =$ **Rs. 12 = Selling Price**

Gain= SP-CP = 12-10 = Rs. 2

Gain percent $= \frac{\text{Gain}}{\text{Cost price}} \times 100 = \frac{2}{10} \times 100 =$ **20%**

3) A sells a car to B at 10% loss. If B sells it for Rs. 54000 and gains 20%, the cost price of the car for A was

a. Rs. 25000
b. Rs. 50000
c. Rs. 37500
d. Rs. 60000

ANSWER: Rs. 50000

Explanation:

B sells for profit of 20%

> **Tip:**
> If **gain is A%,** then **Selling Price = (100+A)% of cost price**

Selling Price = Rs. 54000 = (100+20) % of CP = $\frac{120}{100} \times$ CP

$\therefore$ **CP for B** = $54000 \times \frac{100}{120} = 54 \times 9 =$ **Rs. 45000 = SP for A**

For A there was loss of 10%

> **Tip:**
> If **loss is A%,** then **Selling Price = (100 - A)% of cost price**

Selling Price for A = Rs. 45000 = (100-10)% of CP = $\frac{90CP}{100}$

$\therefore$ **CP** = **Rs.** $\frac{45000 \times 100}{90}$ = **Rs. 50000**

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4) Ramesh sold a statue for a price 25% higher than the original price of the statue. He had however bought the statue at 20% discount on the original price. With the profit of Rs. 2025, find the original price of the statue.

a. Rs. 6000
b. Rs. 7500
c. Rs. 3500
d. Rs. 4500

ANSWER: Rs. 4500

Explanation:

Let original price be P.

Selling Price = 25% more than original price = **125% of P**

Discount is 20%, so, Cost price = (100-20=) **80% of P**

Profit = Selling Price – Cost price

$$2025 = 125\% \text{ of } P - 80\% \text{ of } P = 45\% \text{ of } P = \frac{45}{100} \times P$$

$$\therefore \mathbf{P} = \frac{2025 \times 100}{45} = \mathbf{Rs.\ 4500 = Original\ price}$$

5) If selling price of 40 articles is equal to cost price of 50 articles, the loss or gain percent is

a. 25% loss
b. 20% loss
c. 25% gain
d. 20% gain

ANSWER: 25% gain

Explanation:

Let cost price of 1 article be Re.1

So total **Cost price** = 50 x Re. 1 = **Rs. 50**

Selling prices of 40 articles = Cost price of 50 articles = Rs. 50

$\therefore$ Selling prices of 50 articles = **Rs. ?**

$$\therefore ? = \frac{50 \times 50}{40} = \mathbf{Rs.\ 62.5 = Selling\ Price\ of\ 50\ articles}$$

SP > CP so gain

$$\mathbf{Gain\%} = \frac{SP - CP}{CP} \times 100 = \frac{12.5}{50} \times 100 = \mathbf{25\% = Gain}$$

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6) Two bicycles were sold for Rs. 3990 each, gaining 5% on one and losing 5% on the other. The gain or loss percent on the whole transaction is

a. Neither gain nor loss
b. 2.5% gain
c. 2.5% loss
d. 0.25% loss

ANSWER: 0.25% loss

Explanation:

Tip:
Whenever a person has **A% loss for one** thing and **A% profit for second** thing, then if selling price is same, person will **ALWAYS HAVE LOSS**
And **Loss** $= \frac{A^2}{100}\%$

$$\text{Loss} = \frac{5^2}{100}\% = 0.25\%$$

7) The ratio of cost price and selling price is 4:5. The profit percent is

a. 10%
b. 20%
c. 25%
d. 30%

ANSWER: 25%

Explanation:

Cost Price (CP) : Selling Price (SP) = 4 : 5
Let, SP = Rs. 5 ; So, CP = Rs. 4
Profit = SP-CP = 5-4 = Re. 1

$$\text{Profit \%} = \frac{\text{Profit}}{\text{CP}} \times 100 = \frac{1}{4} \times 100 = 25\%$$

8) If a person sells a 'sari' for Rs. 5200, making a profit of 30%, then the cost price of the sari is

a. Rs. 4420

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b. Rs. 4000

c. Rs. 3900

d. Rs. 3800

ANSWER: Rs. 4000

Explanation:

Tip:
If **profit is A%,** then **Selling Price = (100+A)% of cost price**

Selling Price = (100+30)% of CP

$\therefore 5200 = \frac{130}{100} \times CP$

$\therefore$ **CP = Rs. 4000**

9) A shopkeeper earns a profit of 15% after selling a book at 20% discount on the printed price. The ratio of the cost price and printed price of the book is?

a. 20:23

b. 23:20

c. 16:23

d. 23:16

ANSWER: 16:23

Explanation:

Approach 1 – Direct Observation
Profit and Discount is there,
So, **Cost Price (CP)< Selling Price (SP)<Printed Price (PP)**
This is true for ratio also. So, 23:20 and 23:16 is not possible as here CP > PP
Now first take 20:23
Let PP be 23.
20% discount means 20% of 23 = 4.6
SP = 23-4.6 = 18.4 $\therefore$ SP<CP
Since profit is there SP should be > CP
So answer is 16:23

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Approach 2 – By solving

Let the Printed Price be Rs. 100

Discount is 20%, So, Selling Price (SP) = (100-20)% of 100 = Rs. 80

Profit = Selling Price – Cost price = SP-CP = 80-CP

$$\text{Profit\%} = \frac{\text{Profit}}{\text{CP}} \times 100$$

$$\therefore 15 = \frac{80-\text{CP}}{\text{CP}} \times 100$$

$$\therefore 115\text{CP} = 8000$$

$$\therefore \text{CP} = \frac{1600}{23}$$

$$\therefore \frac{\text{CP}}{\text{Printed Price}} = \frac{\frac{1600}{23}}{100} = \frac{16}{23}$$

10) Simran bought pet food worth Rs. 56000. She then sold 1/3rd of it incurring a loss of 40%. What profit she must earn on rest of the supplies to nullify this loss?

a. 25%

b. 20%

c. 45%

d. 50%

ANSWER: 20%

Explanation:

Nullify the loss means at the end there is no profit no loss.

To nullify loss of 40% in 1 part, we need profit of 40% from 2 parts

There are 3 parts –

1	2	3
Loss 40%	**Profit 40%**	**Profit 40%**

But this will give 40% + 40% = 80% profit.

We only need 40%

Since there are 2 parts, simply divide the required profit % by 2

$$\therefore \textbf{Required Profit \%} = \frac{40}{2} = 20\,\%$$

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11) Ramesh gets a profit of 20% in one trade and suffers a loss of 20% in the second when he sells 2 cycles for Rs. 4000 each. What is his profit or loss in the entire trade?

a. Loss = 4%

b. Loss = 16%

c. Profit = 16%

d. Profit = 4%

ANSWER: Loss = 4%

Explanation:

Tip:

Whenever a person has **A% loss for one** thing and **A% profit for second** thing, then if selling price is same, person will **ALWAYS HAVE LOSS**

And **Loss** $= \frac{A^2}{100}$ **%**

Loss $= \frac{20^2}{100}\% =$ **4%**

12) Suman buys 160 chocolates for Rs. 480. She wanted to earn 30% profit by selling them. But Rakesh visited her and she gave him 25% of those chocolates at the cost price itself. But even after doing this, she earned a profit of 30% as decided. For how much did she sell each chocolate?

a. Rs. 3.8

b. Rs. 4.2

c. Rs. 6

d. Rs. 3

ANSWER: Rs. 4.2

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Explanation:
CP of 1 chocolate = 480 / 160 = Rs. 3
She wanted 30% profit on 160 chocolate. This means
Total Profit = 30% of (480) = Rs. 144
Now on giving 25% means 1/4th chocolates at CP, she has 160-40 = **120 chocolates** with her for earning **profit of Rs. 144**.
SP-CP = Profit on 1 chocolate
∴ 120 x (P-CP) = Total Profit
∴ 120(P-3) = 144
∴ P = Rs. 4.2 = cost of each chocolate

13) Guddi buys some oranges in a shop at 4 per rupee. She goes to other shop and buys same number of oranges at 5 per rupee. She then combines them in a basket and sells them at 4 per rupee. Will she get a profit or loss? And how much?

a. Profit = 100/9 %

b. Loss = 100/9 %

c. Profit = 116/9 %

d. Loss = 116/9 %

ANSWER: Profit = 100/9 %
Explanation:

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1 orange CP in 1st shop = Rs. $\frac{1}{4}$ and 1 orange CP in 2nd shop = Rs. $\frac{1}{5}$

On mixing these 2 oranges, the cost price of these 2 will be = $\frac{1}{4} + \frac{1}{5}$ = Rs. $\frac{9}{20}$

So, CP of 1 orange = $\frac{\frac{9}{20}}{2}$ = Rs. $\frac{9}{40}$

Actual price at which 1 orange is sold after combining = Rs. $\frac{1}{4}$

SP-CP = $\frac{1}{4} - \frac{9}{40} = \frac{1}{40}$ = **It is positive so it is profit**

Tip:

$$\textbf{\% Profit or Loss} = \frac{\textbf{Profit or Loss}}{\textbf{Cost Price}} \textbf{ x 100}$$

% profit = $\frac{1/40}{9/40} \times 100 = \frac{100}{9}\% = 11\frac{1}{9}\%$

14) Chaman sells 40 fans at 10% profit. He wants a total of 20% profit on the entire sale. Since he got 160 fans at rate of Rs. 100 each, at what profit must he sell the remaining fans?

a. 70/3%

b. 160/58%

c. 30%

d. 100/3%

ANSWER: 70/3%

Explanation:

Let Chaman need A% profit to make it overall 20% profit

∴ Profit on 160 fans = Profit on 40 fans + Profit on 120 fans

∴ 20% of (160 x 100) = 10% of (40 x 100) + A% of (120 x 100)

∴ 3200 = 400 + 120A

∴ **A** = $\frac{70}{3}$ **% = This much should be the percentage profit for rest fans**

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15) Uma wants to gain 15% profit on her sale of sugar. She buys 120 kg of sugar at Rs. 24 per kg to mix with 180 kg of sugar bought at Rs. 28 per kg. She sells the sugar mix at ….

a. Rs. 8159

b. Rs. 9108

c. Rs. 9756

d. Rs. 8564

ANSWER: Rs. 9108

Explanation:

Tip:

If **gain is A%,** then **Selling Price = (100+A) % of cost price**

Total cost of sugar = 120 x 24 + 180 x 28 = Rs. 7920

Selling Price = (100+15) % of 7920= $\frac{115}{100}$ x 7920= **Rs. 9108**

---

16) Rohit got profit of 11½% by selling his old car. However he realized that had he sold it for Rs. 8100 more, his profit would be 38.5%. At what price did he buy the car?

a. Rs. 44500

b. Rs. 55000

c. Rs. 41000

d. Rs. 30000

ANSWER: Rs. 30000

Explanation:

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1^{st} profit = 11.5 %

If Rohit sells for Rs. 6500 more, then profit = 38.5%

SP = (100 + Profit %) % of CP

$\therefore SP_1 + 81000 = SP_2$

$\therefore (111.5)\ \%\ CP + 8100 = (138.5)\ \%\ CP$

$\therefore$ **27% of CP** = 8100

$\therefore CP = \frac{8100 \times 100}{27} =$ **Rs. 30000**

17) Rambabu sells paper planes at the rate of 20 planes for Re. 1. If he gets profit of 20%, how many planes did he buy in 1 rupee?

a. 16

b. 40

c. 24

d. 36

ANSWER: 24

Explanation:

Tip:

If **gain is A%,** then **Selling Price = (100+A) % of cost price**

Selling Price = Re. 1 = (120) % of CP = $\frac{120}{100} \times CP$

$\therefore CP = \frac{1 \times 100}{120} =$ Rs. $\frac{5}{6}$

If 20 planes are bought in Rs. $\frac{5}{6}$

? planes are bought in Re. 1

$? = \frac{20 \times 6}{5} =$ **24 planes can be bought in 1 Re.**

18) A cheater manipulated his weighing machine so that it shows 1kg for 970 grams. How much profit does he get?

a. 397/100%

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b. 0.3 %

c. 0.03%

d. 300/97%

ANSWER: 300/97%

Explanation:

1kg is shown as 970 gm. So 30gm are less.

$$\textbf{Profit \%} = \frac{\text{Profit}}{\text{Cost Price i.e. Actual value}} \times 100 = \frac{30}{970} \times 100 = 3\frac{9}{97}\ \textbf{\%}$$

19) Ajay incurred loss of 20% by selling a vase for Rs. 2880. To get a profit of 20% at what price should he sell the vase?

a. Rs. 4320

b. Rs. 5760

c. Rs. 1440

d. Rs. 3500

ANSWER: Rs. 4320

Explanation:

Tip:

If **loss is A%,** then **Selling Price = (100 - A)% of cost price**

$$\textbf{Selling Price} = 2880 = (100\text{-}20)\ \%\ \text{of CP} = \frac{80\,CP}{100}$$

$$\therefore CP = \frac{2880 \times 100}{80}$$

$$\text{For profit} = 20\%,\ \textbf{Selling Price} = (100+20)\ \%\ \text{of CP} = \frac{120}{100} \times \frac{2880 \times 100}{80}$$

$$\therefore \textbf{Selling Price} = \textbf{Rs. 4320}$$

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20) A sold a car to B at a profit of 25%. B incurred loss of 15% while selling the same car to C. A spent Rs. 50000 for this car. At what price did C buy it?

a. Rs. 62500

b. Rs. 60000

c. Rs. 53125

d. Rs. 90000

ANSWER: Rs. 53125

Explanation:

Tip:

If **gain is A%,** then **Selling Price = (100+A)% of cost price**

CP for B = SP for A = (100+25)% of 50000 = $\frac{125}{100}$ x 50000 = **Rs. 62500**

CP for C = SP for B = (100-15)% of 62500= $\frac{85}{100}$ x 62500= **Rs. 53125**

21) What will be selling price, if cost price is Rs. 120 and gain is 35%?

a. Rs. 13
b. Rs. 85
c. Rs. 155
d. Rs. 162

ANSWER: Rs. 162

Explanation:

Tip:

If **gain is A%,** then **Selling Price = (100+A)% of cost price**

Selling Price = (100+35)% of 120 = $\frac{135}{100}$ x 120 = **Rs. 162**

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STRUCTURING AN ARGUMENT

In this section, we will look at the structure of an argument
"I see what your premises are," says the philosopher, "and I see your conclusion. But I just don't see how you get there. I don't see the argument."

What is the argument?

– An argument is a claim defended with reasons. It is composed of a group of statements with one or more statements (premises) supporting another statement (conclusion).

- An argument is an act of presenting reasons to support an individual's position or point of view.
- It is not quarrel or dispute. Or simply, as Bassham's definition of an argument: A claim defended with reasons.
- Arguments are the basis of persuasive communication. They are combinations of statements made that are intended to change the minds of other people.
- All arguments have structure, which can be either deliberately designed or maybe discovered through analysis.

At its simplest, an argument has premises and a conclusion.

Main components in an argument. (a) Premises, (b) Conclusion:
– A simple argument must have a conclusion and at least two premises.
– Premises or propositions are statements that directly support the conclusion.
– A conclusion is what an author or an individual wants me to believe, accept or do.

Premise

A premise of an argument is something that is put forward as a truth, but which is not proven. Although it is not proven, it is assumed to be true (although how universally accepted this truth is maybe another matter).

- It is hot in here.
- This is a beautiful car.
- The people of this town are angry.

If you want to attack another person's argument, you can challenge the truth of their premises. If you are making an argument, you should be ready to defend any of your premises.
The more complex the premise, the more opportunity there is to challenge it, so if you expect a challenge, keep your premises both short and non-controversial.
As premises are the building blocks of the argument, there may well be two or more premises in any argument.

Conclusion

The conclusion (or claim) is the statement with which you want the other person to agree. It is drawn from the premises of the argument, of which there may be many.

- We need to get out.

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- You should buy this car.
- The new housing should be sited elsewhere.

A useful way of spotting a conclusion is that it may well be a statement of necessity, saying what must or should happen. It may well be framed to persuade the other person to do something or make some decision.

Inference

– Between the conclusion and the premises are further statements which translate the premises into the conclusion. This is the reasoning process, and in a formal argument uses careful logic (in informal arguments, emotional reasoning and assumptive leaps may well be used).

A particular aspect of the logical argument is that inferential statements have true-false qualities — that is, they are either true or false and nothing in between. Thus a sentence can contain many statements.

- If we stay here, we will not only get uncomfortable, we will also start to smell.
- There are other people interested in this car who will be here later.
- If we don't do something, the peasants will revolt.

Inferential arguments seek to prove. Thus commands, explanations and other statements may not directly add to the inference, although they may be a useful component of persuasion.

- Look at this. (command)
- The people are angry because we did not listen to them. (explanation)
- I hate it when cars don't start. (emotion)

Implicit conclusion & implicit premise:

– An implicit conclusion is when the conclusion is not stated outright and the arguer assumes that you will know it.
– An implicit premise is when the premise is not stated outright and the arguer assumes that you will know it.

Based on the above fact generally, three types of Question were asked in UGC NET exam in the logical reasoning section –

Statement & Assumption Test
Statement & Argument Test
Statement & Inference Test

How to solve –

In each question below is given a statement followed by two assumptions numbered I and II. You have to consider the statement and the following assumptions and decide which of the assumptions is implicit in the statement.

Statement:
The GOI has decided to pay compensation to the tune of Rs. 10 lakh to the family members of those who are killed in major railway accidents.
Assumptions:
The government has enough funds to meet the expenses due to compensation.
There may be a reduction in incidents of railway accidents in the near future.
(A) If the only assumption I is implicit
(B) If only assumption II is implicit
(C) If either I or II is implicit
(D) If neither I nor II is implicit

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(E) If both I and II are implicit.

If you consider the statement given that Gov of India has decided to pay 10 lakh compensation for railway accidents that means it must have been discussed in minister councils and subsequently rules has been provisioned after considering the amount that might need to allocate for this fund.
Means- The government has enough funds to meet the expenses due to compensation.
However, The no of train incidents are unpredictable and this cant guarantee that there will be a reduction in incidents of railway accidents in the near future.
Hence – the only assumption I is implicit

These type of Question are commonly asked you need to give attention to details. You might not able to identify that given assumption is implicit or not in the first few attempts however one you practise more questions based on the same pattern you will be able to identify them.

Statement & Argument Test

Paper Pattern – Questions are givens with the statement and you need to identify which of argument is strong & week

How to solve –

Each question given below consists of a statement, followed by two arguments numbered I and II.
You have to decide which of the arguments is a 'strong' argument and which is a 'weak' argument.
Answer:
* (A) If only argument I is strong
* (B) If only argument II is strong
* (C) If either I or II is strong
* (D) If neither I nor II is strong and
* (E) If both I and II are strong.

Usually, in these questions, a statement is given which is followed by two arguments. An individual is required to differentiate between strong and weak arguments.
You will see many different types of questions in this section. Usually, confusing questions will be asked.
The arguments that will be provided will generally be contrary to each other.
You have to choose the strong argument which satisfies the Statement.

Example 1-

Statement: Should taxes on colour television be further increased?
Arguments:

- Yes, Colour television is a luxury item and only rich people buy them.
- No, Televisions are bought by the poor too.

1. Only argument I is strong
2. Only argument II is strong
3. Either I or II is strong
4. Neither I nor II is strong
5. Both I and II are strong

Answer: Option 4

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Explanation: Taxes on an item cannot be increased or decreased based on the financial position of the people who buy it. So, both arguments I and II do not hold strong.

Example 2-

Statement: Should India become a permanent member of the UN's Security Council?
Arguments:

- Yes. India has emerged as a country which loves peace and amity.
- No. Let us first solve the problems of our people like poverty, malnutrition.

1. Only argument I is strong
2. Only argument II is strong
3. Either I or II is strong
4. Neither I nor II is strong
5. Both I and II are strong

Answer: Option 1
Explaination:- A peace-loving nation like India can well join an international forum which seeks to bring different nations on friendly terms with each other. So, the argument I hold strong. Argument II highlights a different aspect. The internal problems of a nation should not debar it from strengthening international ties. So, argument II is vague.

Statement & Inference Test

Paper Pattern – Questions are givens with the statement and you need to identify which of inference/Conclusion is correct.

How to solve –

In each question below is given a statement followed by two conclusions numbered I and II. You have to assume everything in the statement to be true, then consider the two conclusions together and decide which of them logically follows beyond a reasonable doubt from the information given in the statement.

Statements:

The government has spoiled many top-ranking financial institutions by appointing bureaucrats as Directors of these institutions.
Conclusions:

- The government should appoint Directors of the financial institutes taking into consideration the expertise of the person in the area of finance.
- The Director of the financial institutions should have expertise commensurate with the financial work carried out by the institute.

A. Only conclusion I follows
B. Only conclusion II follows
C. Either I or II follows
D. Neither I nor II follows
E. Both I and II follow

Answer: Option E
Explanation: According to the statement, the Government has spoiled financial institutions by the appointing bureaucrats as Directors. This means that only those persons should be appointed as Directors who are experts in finance and are acquainted with the financial work of the institute. So, both I and II follow.

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Statement: Should an organization like UNO be dissolved?
Arguments:

- Yes. With cold war coming to an end, such organizations have no role to play
- No, In the absence of such organizations there may be a world war.

A. Only argument I is strong
B. Only argument II is strong
C. Either I or II is strong
D. Neither I nor II is strong
E. Both I and II are strong

Answer: Option B
Explanation: An organization like UNO is meant to maintain peace all over and will always serve to prevent conflicts between countries. So, its role never ends. So, the argument I do not hold. Also, lack of such an organization may in future lead to increased mutual conflicts and international wars, on account of lack of a common platform for mutual discussions. So, argument II holds.

The Difference Between Deductive and Inductive Reasoning

First, both deduction and induction are ways to learn more about the world and to convince others about the truth of those leanings. None of these terms would mean anything or are useful to anyone if they weren't used to do something useful, like determining who
committed a crime, or how many planets might harbor life in the Milky Way galaxy. Induction and Deduction help us deal with real world problems.
"The biggest difference between deductive and inductive reasoning is that deductive reasoning starts with a statement or hypothesis and then tests to see if it's true through observation, where inductive reasoning starts with observations and moves backward towards generalizations and theories."

Key Points

- Deduction moves from idea to observation, while induction moves from observation to idea.
- Deduction moves from more general to more specific, while induction moves from more specific to more general.
- Deductive arguments have unassailable conclusions assuming all the premises are true, but inductive arguments simply have some measure of probability that the argument is true—based on the strength of the argument and the evidence to support it.

" All men are mortal. Harold is a man. Therefore, Harold is mortal."

Deduction
I have a bag of many coins, and I've pulled 10 at random and they've all been pennies, therefore this is probably a bag full of pennies.

Induction
This gives some measure of support for the argument that the bag only has pennies in it, but it's not complete support like we see with deduction.

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- Deduction has theories that predict an outcome, which are tested by experiments. Induction makes observations that lead to generalizations for how that thing works.
- If the premises are true in deduction, the conclusion is definitely true. If the premises are true in induction, the conclusion is probably true.
- Deduction is hard to use in everyday life because it requires a sequential set of facts that are known to be true. Induction is used all the time in everyday life because most of the world is based on partial knowledge, probabilities, and the usefulness of a theory as opposed to its absolute validity.
- Deduction is more precise and quantitative, while induction is more general and qualitative.

What is Analogies

- ‘Analogy’ means ‘correspondence’ or ‘Similar items’. In other words, we can say the similarity or similar relation existence between the given subject.
- In analogy based question section, you will find that a particular relationship is given and another similar relationship has to identify from the alternatives provided.
- Analogy based tests are meant to test a candidate’s overall knowledge, power of verbal reasoning and ability to think concisely and accurately. There is three types of Analogy-
  - **Number Analogy**
  - **Letter Analogy**
  - **Word Analogy**

Number Analogy

The candidates are asked to identify and point out relationships, similarities or differences, and dissimilarities in a series or between groups of numbers.

In most of the cases relationships between the numbers in a given pair can be any of the following:

- One number is a multiple of the other.
- One number is the square or square root of the other.
- One number is the cube or cube root of the other.
- The two numbers can be consecutive, even, odd or prime numbers.

Understanding Number Analogy is a crucial step in solving questions on reasoning ability. The reasoning ability is checked mainly by the questions related to Number Analogy.

Examples based on Number Analogy

#1 What number will follow the given series of numbers: 3, 6, 11, __ _?

1. 13
2. 16
3. 18
4. 22

The missing term is = 4 x 2 + 2 = 18. Hence the answer is 18.

#2 121 : 12 : : 25 : ?

The relationship is $x^2 : (x + 1)$.

Letter Analogy

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The questions based on letter analogy are similar to number analogy. Here, the questions are based on the relationship between two groups of letters on each side of the sign : :
Normally, three pairs of letters are given followed by a question mark where the fourth pair of letters is supposed to come.

Examples based on Letter Analogy

#1 Find the missing term : YWZX : USVT : : MKNL : ?
(a) IGGH (b) IGJH (c) IGJJ (d) IGHH
Alphabets are used in reverse order. In the first term, the order of alphabet is 2, 4, 1 and 3 and in the second term, the order is 6, 8, 5 and 7. So, the missing term is IGJH.

#2 ? : I K M O : : Q S U W : YA C E
(a) ACEG (b) ADEG (c) ACDG (d) ADDG
In each group, one letter is skipped between every two consecutive letters. So, the missing term will be ACEG.

Word Analogy

In word analogy questions there is a certain relationship between the two given words on one side of and one word is given on the other side.
Students are asked to find the correct alternative that has same relationship with that word.
There are many possibilities in establishing a relationship. Here are some useful points on the basic knowledge required for the test.

- Tool and Action
- Worker and Working Place (Eg: Farmer : Field : : Doctor : Hospital)
- Worker and Product (Eg: Carpenter : Furniture : : Mason : Wall)
- Quantity and Unit (Eg: Length : Metre : : Distance : Light Year)
- Instrument and Measurement
- Study and Topic (Eg: Botany : Plants : : Ornithology : Birds)
- Word and Antonym
- Person and field
- Book & author

Examples based on Word Analogy

#1 Sailor : Ship : : Lawyer : ?
(a) Legal (b) Law (c) Court (d) Ruling
'Sailor' works at 'Ship', similarly 'Lawyer' works at 'Court'.

#2 Love : Hate : : Create : ?
(a) Make (b) Renovate (c) Destroy (d) Building
Solution.(c) 'Hate' is just opposite of 'Love'. Similarly, 'Destroy' is just opposite of 'Create'.

#3 In each of the following questions, select the related word from the given alternatives.
Book : Publisher : : Film ; ?

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(a)Writer (b) Editor (c) Director (d) Producer

#4 Current is related to Ampere in the same way as Weight is related to
1. Measurement
2. Commodity
3. Pound
4. Scale E. None of these
Current is measured in terms of Ampere and Weight is measured in terms of Pound.

#5 Fish is related to Water in the same way as Bird is related to
1. Water
2. Sky
3. Food
4. Air
5. None of these
Fish swims in Water and Bird flies in the Sky.

MCQ on Logical Reasoning

1.Superiority of intellect depends upon its power of concentration on one theme in the same way as a concave mirror collects all the rays that strike upon it into one point.
(1) Mathematical
(2) Psychological
(3) Analogical
(4) Deductive
Answer:3

2.Given below are two premises (A and B). Four conclusions are drawn from them. Select the code that states validity drawn conclusion (s) (taking the premises individually or jointly). Premises:
(A) Most of the dancers are physically fit.
(B) Most of the singers are dancers.
Conclusions:
(a) Most of the singers are physically fit.
(b) Most of the dancers are singers.
(c) Most of the physically fit persons are dancers.
(d) Most of the physically fit persons are singers.
Code:
(1) (a) and (b)
(2) (b) and (c)
(3) (c) and (d)
(4) (d) and (a)
Answer:2

3. Which one among the following is a presupposition in inductive reasoning?
(1) Law of identity
(2) Unchangeability in nature
(3) Harmony in nature

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(4) Uniformity of nature
Answer:4

4. If the proposition 'domestic animals are hardly ferocious' is taken to be false, which of the following proposition/propositions can be claimed to be certainly true? Select the correct code:
Propositions:
(a) All domestic animals are ferocious.
(b) Most of the domestic animals are ferocious.
(c) No domestic animal is ferocious.
(d) Some domestic animals are non-ferocious.
Code:
(1) (a) and (b)
(2) (a) only
(3) (c) and (d)
(4) (b) only
Answer:1

5. Which one of the following statements is not correct in the context of Venn diagram method?
(1) It is a method of testing the validity of arguments.
(2) It represents both the premises of a syllogism in one diagram.
(3) It requires two overlapping circles for the two premises of a standard-form categorical syllogism.
(4) It can be used to represent classes as well as propositions.
Answer:3

6. It is Truism to say that no one was there when life first appeared on earth. Any assertion about life's origin thus, should be treated as a theory. The above two statements constitute:
(1) A narrative
(2) An argument
(3) A conjecture
(4) A historical explanation
Answer:2

7. Given below are four statements. Among them, two are related in such a way that they can both be true but they cannot both be false. Select the code that indicates those two statements:
Statements:
(a) Honest people never suffer.
(b) Almost all honest people do suffer.
(c) Honest people hardly suffer.
(d) Each and every honest person suffers. Code:
(1) (a) and (c)
(2) (a) and (d)
(3) (b) and (c)
(4) (a) and (b)
Answer:3

8. A deductive argument is invalid if:
(a) Its premises and conclusion are all false
(b) Its premises are all false but its conclusion is true.
(c) Its premises are all true but its conclusion is false.
(d) Its premises and conclusion are all true.

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Answer:3

9. Given below are two premises (a and b), from those two premises four conclusions (i), (ii), (iii) and (iv) are drawn. Select the code that states the conclusion/conclusions drawn validity (taking the premises singularly or jointly).
Premises:
(a) All bats are mammals
(b) No birds are bats
Conclusion:
(i) No birds are mammals
(ii) Some birds are not mammals
(iii) No bats are birds
(iv) All mammals are bats
Code:
(1) (i) and (ii) only
(2) (iii) only
(3) (iii) and (iv) only
(4) (i) only
Answer:2

10. Just melting ice-cubes do not change a glass of water to overflow. Melting sea – ice does not increase change volume. What type of argument is it?
(1) Hypothetical
(2) Psychological
(3) Statistical
(4) Analogical
Answer:4

11.Given below are some characteristics of reasoning. Select the code that states a characteristic which is not of deductive reasoning:
(1) The conclusion must be based on observation and experiment.
(2) The conclusion should be supported by the premise/premises.
(3) The conclusion must follow from the premise/premises necessarily.
(4) The argument may be valid or invalid.
Answer:1

12. The missing term in the series 1, 4, 27, 16, ?, 36, 343, … is
(1) 30
(2) 49
(3) 125
(4) 81
Answer:3

13. Men and woman may have different reproductive strategies but neither can be considered inferior or superior to the other, any more than a bird's wings can be considered superior or inferior to a fish's fins.
What type of argument it is ?
(1) Biological
(2) Physiological
(3) Analogical
(4) Hypothetical

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Answer:3

14. Among the following propositions two are related in such a way that they cannot both be true but can both be false. Select the code that states those two propositions.
Propositions:
(a) Every student is attentive.
(b) Some students are attentive.
(c) Students are never attentive.
(d) Some students are not attentive.
Codes:
(1) (a) and (b)
(2) (a) and (c)
(3) (b) and (c)
(4) (c) and (d)
Answer:3

15. Given below are two premises ((a) and (b)). From those two premises four conclusions (i), (ii), (iii) & (iv) are drawn. Select the code that states the conclusions validly drawn from the premises (taking singly or jointly.)
Premises:
(a) Untouchability is a curse.
(b) All hot pans are untouchable.
Conclusions:
(i) All hot pans are curse.
(ii) Some untouchable things are hot pans.
(iii) All curses are untouchability.
(iv) Some curses are untouchability.
Codes:
(1) (i) and (ii)
(2) (ii) and (iii)
(3) (iii) and (iv)
(4) (ii) and (iv)
Answer:4

16. If the statement 'None but the brave wins the race' is false which of the following statements can be claimed to be true?
Select the correct code:
(1) All brave persons win the race.
(2) Some persons who win the race are not brave.
(3) Some persons who win the race are brave.
(4) No person who wins the race is brave.
Answer:2

17. Among the following propositions, two are related in such a way that one is the denial of the other. Which are those propositions? Select the correct code:
Propositions:
(a) All women are equal to men
(b) Some women are equal to men
(c) Some women are not equal to men
(d) No women are equal to men
Codes:

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(1) (a)and(b)
(2) (a)and(d)
(3) (c)and(d)
4) (a)and(c)
Answer:4

18. If the proposition 'All thieves are poor' is false, which of the following propositions can be claimed certainly to be true ?
Propositions:
(1) Some thieves are poor.
2) Some thieves are not poor.
(3) No thief is poor.
(4) No poor person is a thief.
Answer:2

19. Consider the following statement and select the correct code stating the nature of the argument involved in it:
To suppose that the earth is the only populated world in the in_nite space is as absurd as to assert that in an entire field of millet only one grain will grow.
(1) Astronomical
(2) Anthropological
(3) Deductive
(4) Analogical
Answer:4

20. Select the code which is not correct about Venn diagram:
(1) Venn diagram represents propositions as well as classes.
(2) It can provide clear method of notation.
(3) It can be either valid or invalid.
(4) It can provide the direct method of testing the validity.
Answer:3

21. Select the code which is not correct in the context of a deductive argument with two premises:
(1) An argument with one true premise, one false premise and a false conclusion may be valid.
(2) An argument with two true premises and a false conclusion may be valid.
(3) An argument with one true premise, one false premise and a true conclusion may be valid.
(4) An argument with two false premises and a false conclusion may be valid.
Answer:2

22. Given below are two premises and four conclusions are drawn from them (taking singly or together).
Select the code that states the conclusions validly drawn.
Premises:(i) All religious persons are emotional.
(ii) Ram is a religious person.
Conclusions :(a) Ram is emotional.
(b) All emotional persons are religious.
(c) Ram is not a non-religious person.
(d) Some religious persons are not emotional.
Codes:
(1) (a),(b),(c)and(d)
(2) (a)only
(3) (a) and (c) only

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(4) (b) and (c) only
Answer:3

23. Consider the argument given below ;
'Pre-employment testing of teachers is quite fair because doctors; architects and engineers who are now employed had to face such a testing.'
What type of argument it is ?
(1) Deductive
(2) Analogical
(3) Psychological
(4) Biological
Answer:2

24. Among the following propositions two are related in such a way thai, they can both be true although they cannot both be false. Which are those propositions? Select the correct code.
Propositions :
(a) Some priests are cunning.
(b) No priest is cunning.
(c) All priests are cunning.
(d) Some priests are not cunning.
Codes :
(1) (a) and (b)
(2) (c) and (d)
(3) (a) and (c)
(4) (a) and (d)
Answer:4

25. A Cluster of propositions with a structure that exhibits some inference is called :
(1) An inference
(2) An argument
(3) An explanation
(4) A valid argument
Answer:2

26. Consider the following assertion (A)and reason (R) and select the correct code given below :
(A) : No man is perfect.
(R) : Some men are not perfect.
(1) Both (A) and (R) are true but (R) does not provide sufficient reason for (A).
(2) Both (A) and (R) are true and (R) provides sufficient reason for (A).
(3) (A) is true but (R) is false
(4) (A) is false but (R) is true
Answer:1

27. A definition that has a meaning that is deliberately assigned to some symbol is called :
(1) Lexical
(2) Precising
(3) Stipulative
(4) Persuasive
Answer:3

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28. If the proposition 'No men are honest' is taken to be false which of the following proposition/ propositions can be claimed certainly to be true?
Propositions :
(1) All men are honest
(2) Some men are honest
(3) Some men are not honest
(4) No honest person is man
Answer:2

29. If we want to seek new knowledge of facts about the world, we must rely on reason of the type:
(1) Inductive
(2) Deductive
(3) Demonstrative
(4) Physiological
Answer:1

30. A deductive argument is invalid if:
(1) Its premises and conclusions are all false
(2) Its premises are true but its conclusion is false
(3) Its premises are false but its conclusion is true
(4) Its premises and conclusions are all true
Answer:2

31. Inductive reasoning is grounded on :
(1) Integrity of nature
(2) Unity of nature
(3) Uniformity of nature
(4) Harmony of nature
Answer:3

32. Among the following statements two are contradictory to each other. Select the correct code that represents them :
Statements :
(a) All poets are philosophers.
(b) Some poets are philosophers.
(c) Some poets are not philosophers.
(d) No philosopher is a poet.
Codes :
(1) (a)and(b)
(2) (a) and (d)
(3) (a) and (c)
(4) (b) and (c)
Answer:3

33. Which of the codes given below contains only the correct statements?
Select the code :
Statements :
(a) Venn diagram represents the arguments graphically.
(b) Venn diagram can enhance our understanding.

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(c) Venn diagram may be called valid or invalid.
(d) Venn diagram is clear method of notation.
Codes :
(1) (a), (b) and (c)
(2) (a), (b) and (d)
(3) (b), (c) and (d)
(4) (a), (c) and (d)
Answer:2

34. When the purpose of a de_nition is to explain the use or to eliminate ambiguity the definition is called:
(1) Stipulative
(2) Theoretical
(3) Lexical
(4) Persuasive
Codes:
(1) (a), (b), (c) and (d)
(2) (a), (b) and (c)
(3) (a), (b) and (d)
(4) (b), (c) and (d)
Answer:3

35. “A man ought no more to value himself for being wiser than a woman if he owes his advantage to a better education than he ought to boast of his courage for beating a man when his hands were tied.”
The above passage is an instance of
(1) Deductive argument
(2) Hypothetical argument
(3) Analogical argument
(4) Factual argument
Answer:3

36.By which of the following proposition, the proposition wise men are hardly afraid death is contradicted?
(1) Some wise men are afraid of death.
(2) All wise men are afraid of death.
(3) No wise men is afraid of death.
(4) Some wise men are not afraid of death.
Answer:2

37. When in a group of propositions, one proposition is claimed to follow from the others, the group of propositions is called
(A) An argument
(B) A valid argument
(C) An explanation
(D) An invalid argument
Answer:A

38. Namita and Samita are brilliant and studious. Anita and Karabi are obedient and irregular Babita and Namita are irregular but brilliant. Samita and Kabita are regular and obedient. Who among them is/are brilliant, obedient, regular and studious?
(A) Samita alone
(B) Namita and Samita

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(C) Kabita alone
(D) Anita alone
Answer:A

39. If two propositions having the same subject and predicate terms can both be true but can not both be false, the relation between those two propositions is called
(A) contradictory
(B) contrary
(C) sub-contrary
(D) subaltern
Answer:C

40. One writes all numbers from 50 to 99 without the digits 2 and 7. How many numbers have been written?
(A) 32
(B) 36
(C) 40
(D) 38
Answer:A

41. “If a large diamond is cut up into little bits, it will lose its value just as an army is divided up into small units of soldiers, it loses its strength.” The argument put above may be called as
A) Analogical
(B) Deductive
(C) Statistical
(D) Causal
Answer:A

42. Given below are some characteristics of logical argument. Select the code which expresses a characteristic which is not of inductive in character.
(A) The conclusion is claimed to follow from its premises.
(B) The conclusion is based on causal relation.
(C)The conclusion conclusively follows from its premises.
(D) The conclusion is based on observation and experiment.
Answer:C

43. Given below are two premises and four conclusions drawn from those premises. Select the code that expresses conclusion drawn validly from the premises (separately or jointly).
Premises:
(a) All dogs are mammals.
(b) No cats are dogs.
Conclusions:
(i) No cats are mammals.
(ii) Some cats are mammals.
(iii) No dogs are cats.
(iv) No dogs are non-mammals.
Codes:
(A) (i) only
(B) (i) and (ii)
(C) (iii) and (iv)
(D) (ii) and (iii)

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Answer:C

44. If two propositions having the same subject and predicate terms are such that one is the denial of the other, the relationship between them is called
(A) Contradictory
(B) Contrary
(C) Sub-contrary
(D) Sub-alternation
Answer:A

45. Ananya and Krishna can speak and follow English. Bulbul can write and speak Hindi as Archana does. Archana talks with Ananya also in Bengali. Krishna can not follow Bengali. Bulbul talks with Ananya in Hindi. Who can speak and follow English, Hindi, and Bengali?
(A) Archana
(B) Bulbul
(C) Ananya
(D) Krishna
Answer:C

46. A stipulative definition may be said to be
(A) Always true
(B) Always false
(C) Sometimes true, sometimes false
(D) Neither true nor false
Answer:D

47. When the conclusion of an argument follows from its premise/premises conclusively, the argument is called
(A) Circular argument
(B) Inductive argument
(C) Deductive argument
(D) Analogical argument
Answer:C

48. Saturn and Mars are planets like the earth. They borrow light from the Sun and moves around the Sun as the Earth does. So those planets are inhabited by various orders of creatures as the earth is. What type of argument is contained in the above passage?
(A) Deductive
(B) Astrological
C) Analogical
(D) Mathematical
Answer:C

49. Given below are two premises. Four conclusions are drawn from those two premises in four codes. Select the code that states the conclusion validly drawn.
Premises:
(i) All saints are religious, (major)
(ii) Some honest persons are saints. (minor)
Codes :
(A) All saints are honest.
(B) Some saints are honest.

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(C) Some honest persons are religious.
(D) All religious persons are honest
Answer:C

50. If the statement 'some men are honest' is false, which among the following statements will be true Choose the correct code given below
(i) All men are honest
(ii) No men are honest
(iii) Some men are not honest
(iv) All men are dishonest
Codes:
(A) (i), (ii) and (iii)
(B) (ii), (iii) and (iv)
(C) (i), (iii) and (iv)
(D) (ii), (i) and (iv)
Answer:B

51. Choose the proper alternative given in the codes to replace the question Bee – Honey, Cow – Milk, Teacher–?
(A) Intelligence
(B) Marks
(C) Lessons
(D) Wisdom
Answer:D

52. P is the father of R and S is the son of Q and T is the brother of P, If R is the sister of S, how is Q related to T?
(A) Wife
(B) Sister-in-law
(C) Brother-in-law
(D) Daughter-in-law
Answer:B

53. A definition put forward to resolve a dispute by influencing attitudes or stirring emotions is called
(A)Lexical
(B) Persuasive
(C) Stipulative
(D)Precisions
Answer:B

54. Which of the codes given below contains only the correct statements?
Statements:
(i) Venn diagram is a clear method of notation
(ii) Venn diagram is the most direct method of testing the validity of categorical syllogisms
(iii) In Venn diagram method the premises and the conclusion of a categorical syllogism is diagrammed.
(iv) In Venn diagram method the three overlapping circles are drawn for testing a categorical syllogism
Codes:
(A) (i) (ii) & (iii)
(B) (i) (ii) &(iv)
(C) (ii) (iii)& (iv)

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(D) (i) (iii) &(iv)
Answer:B

55. Inductive reasoning presupposes
(A) Unity in human nature
(B) Integrity in human nature
(C) Uniformity in human nature
(D) Harmony in human nature
Answer:C

56. By which of the following proposition, the proposition 'some men are not honest' is contradicted?
(A) All men are honest.
(B) Some men are honest.
(C) No men are honest.
(D) All of the above.
Answer:A

57. A stipulative definition is
(A) always true
(B) always false
(C) sometimes true sometimes false
(D) neither true nor false
Answer:D

58. Choose the appropriate alternative given in the codes to replace the question mark.
Examiner – Examinee, Pleader – Client, Preceptor–?
(A) Customer
(B) Path-Finder
(C) Perceiver
(D) Disciple
Answer:D

59 .If the statement 'most of the students are obedient' is taken to be true, which one of the following pair of statements can be claimed to be true?
I. All obedient persons are students.
II. All students are obedient.
III. Some students are obedient.
IV. Some students are not disobedient.
Codes :
(A) I&II
(B) II & III
(C) III & IV
(D) II&IV
Answer:C

60. Choose the right code :
A deductive argument claims that :
I. The conclusion does not claim something more than that which is contained in the premises.
II. The conclusion is supported by the premise/premises conclusively.
III. If the conclusion is false, then premise/premises may be either true or false.

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IV If premise/combination of premises is true, then conclusion must be true.
Codes :
(A) I and II
(B) I and III
(C) II and III
(D) All the above
Answer:A

61. The basis of the following classification is :
'First President of India' 'author of Godan' 'books in my library', 'blue things' and 'students who work hard'
(A) Common names
(B) Proper names
(C) Descriptive phrases
(D) Indefinite description
Answer:C

62. In the expression 'Nothing is larger than itself' the relation 'is larger than' is
(A) antisymmetric
(B) asymmetrical
(C) intransitive
(D) irreflexive
Answer:D

63. Assertion (A) : There are more laws on the books today than ever before, and more crimes being committed than ever before.
Reason (R) : Because to reduce crime we must eliminate the laws.
Choose the correct answer from below :
(A) (A) is true, (R) is doubtful and (R) is not the correct explanation of (A).
(B) (A) is false, (R) is true and (R) is the correct explanation of (A).
(C) (A) is doubtful, (R) is doubtful and (R) is not the correct explanation of (A).
(D) (A) is doubtful, (R) is true and (R) is not the correct explanation of (A).
Answer:A

64. If the proposition "All men are not mortal" is true then which of the following inferences is correct?
Choose from the code given below :
1. "All men are mortal" is true.
2. "Some men are mortal" is false.
3. "No men are mortal" is doubtful.
4. "All men are mortal" is false.
Code :
(A) 1, 2 and 3
(B) 2, 3 and 4
(C) 1, 3 and 4
(D) 1 and 3
Answer:B

65. Determine the nature of the following
definition : "Abortion" means the ruthless murdering of innocent beings.
(A) Lexical
(B) Persuasive

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(C) Stipulative
(D) Theoretical
Answer:B

66. Which one of the following is not an argument?
(A) Devadutt does not eat in the day so he must be eating at night.
(B) If Devadutt is growing fat and if he does not eat during the day, he will be eating at night.
(C) Devadutt eats in the night so he does not eat during the day.
(D) Since Devadutt does not eat in the day, he must be eating in the night.
Answer:B

67. Venn diagram is a kind of diagram to
(A) represent and assess the validity of elementary inferences of syllogistic form.
(B) represent but not assess the validity of elementary inferences of syllogistic form.
(C) represent and assess the truth of elementary inferences of syllogistic form.
(D) assess but not represent the truth of elementary inferences of syllogistic form.
Answer:A

68. Reasoning by analogy leads to
(A) certainty
(B) definite conclusion
(C) predictive conjecture
(D) surety
Answer:C

69. Which of the following statements are false? Choose from the code given below :
1. Inductive arguments always proceed from the particular to the general.
2. A cogent argument must be inductively strong.
3. A valid argument may have a false premise and a false conclusion.
4. An argument may legitimately be spoken of as ‘true’ or ‘false’.
Code :
(A) 2, 3 and 4
(B) 1 and 3
(C) 2 and 4
(D) 1 and 2
Answer:C

70. Six persons A, B, C, D, E, and F are standing in a circle. B is between F and C, A is between E and D, F is to the left of D. Who is between A and F?
(A) B
(B) C
(C) D
(D) E
Answer:C

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DATA INTERPRETATION

Data Sources & acquisition

Data can be defined as the quantitative or qualitative values of a variable. Data is plural of datum which literally means to give or something given. Data is thought to be the lowest unit of information from which other measurements and analysis can be done.
Data can be numbers, images, words, figures, facts or ideas. Data in itself cannot be understood and to get information from the data one must interpret it into meaningful information. There are various methods of interpreting data.

Data sources are broadly classified into primary and secondary data.

Data collection plays a very crucial role in the statistical analysis. In research, there are different methods used to gather information, all of which fall into two categories, i.e. primary and secondary data (Douglas, 2015).
As the name suggests, primary data is one which is collected for the first time by the researcher while secondary data is the data already collected or produced by others.
There are many differences between primary and secondary data, which are discussed in this work. But the most important difference is that—

- primary data is factual and original whereas secondary data is just the analysis and interpretation of the primary data.
- While primary data is collected with an aim for getting a solution to the problem at hand, secondary data is collected for other purposes.
- The fundamental differences between primary and secondary data are; the term primary data refers to the data originated by the researcher for the first time while secondary data is the already existing data collected by the investigator agencies and organizations earlier.

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- Primary data sources include surveys, observations, experiments, questionnaire, personal interview etc. on the other contrary, secondary data collection sources are government publications, websites, books, journal articles, internal records etc.

PRIMARY DATA

Primary data means original data that has been collected specially for the purpose in mind. It means Data collected this way is called primary data. Primary data has not been published yet and is more reliable, authentic and objective. Primary data has not been changed or altered by human beings; therefore, its validity is greater than secondary data.

SECONDARY DATA

Secondary data is the data that has been already collected by and readily available from other sources. When we use Statistical Method with Primary Data from another purpose for our purpose we refer to it as Secondary Data. It means that one purposes Primary Data is another purposes Secondary Data. So that secondary data is data that is being reused. Such data are more quickly obtainable than the primary data.

These secondary data may be obtained from many sources, including literature, industry surveys, compilations from computerized databases and information systems, and computerized or mathematical models of environmental processes.

DATA ACQUISITION

Data is one of the most important and vital aspect of any research studies. Researchers conducted in different fields of study can be different in methodology but every research is based on data which is analyzed and interpreted to get information. Data is the basic unit in statistical studies. Statistical information like census, population variables, health statistics, and road accidents records are all developed from data.

There are two sources of data collection techniques. Primary and Secondary data collection techniques, Primary data collection uses surveys, experiments or direct observations. Secondary data collection may be conducted by collecting information from a diverse source of documents or electronically stored information, census and market studies are examples of a common sources of secondary data. This is also referred to as “data mining.”

Survey-

Survey is most commonly used method in social sciences, management, marketing and psychology to some extent. Surveys can be conducted in different methods.

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Questionnaire-

Questionnaire is the most commonly used method in survey. Questionnaires are a list of questions either an open-ended or close -ended for which the respondent give answers. Questionnaire can be conducted via telephone, mail, live in a public area, or in an institute, through electronic mail or

Interview-

Interview is a face-to-face conversation with the respondent. It is slow, expensive, and they take people away from their regular jobs, but they allow in-depth questioning and follow-up questions.

Observations-

Observations can be done while letting the observing person know that he is being observed or without letting him know. Observations can also be made in natural settings as well as in artificially created environment.

Published Printed Sources

There are varieties of published printed sources. Their credibility depends on many factors. For example, on the writer, publishing company and time and date when published. New sources are preferred and old sources should be avoided as new technology and researches bring new facts into light.

Books

Books are available today on any topic that you want to research. The uses of books start before even you have selected the topic. After selection of topics books provide insight on how much work has already been done on the same topic and you can prepare your literature review. Books are secondary source but most authentic one in secondary sources.

Journals/periodicals

Journals and periodicals are becoming more important as far as data collection is concerned. The reason is that journals provide up-to-date information which at times books cannot and secondly, journals can give information on the very specific topic on which you are researching rather talking about more general topics.

Magazines/Newspapers

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Magazines are also effective but not very reliable. Newspaper, on the other hand, is more reliable and in some cases, the information can only be obtained from newspapers as in the case of some political studies.

Published Electronic Sources

As internet is becoming more advance, fast and reachable to the masses; it has been seen that much information that is not available in printed form is available on internet. In the past the credibility of internet was questionable but today it is not.
The reasons that in the past journals and books were seldom published on internet but today almost every journal and book is available online. Some are free and for others you have to pay the price.

E-journals: e-journals are more commonly available than printed journals. Latest journals are difficult to retrieve without a subscription but if your university has an e-library you can view any journal, print it and those that are not available you can make an order for them. General Websites; Generally, websites do not contain very reliable information so their content should be checked for the reliability before quoting from them.

Weblogs: Weblogs are also becoming common. They are actually diaries written by different people. These diaries are as reliable to use as personal written diaries.

Classification of Data

Data classification is the process of organizing data into categories for its most effective and efficient use. Classification is the way of arranging the data in different classes in order to give a definite form and a coherent structure to the data collected, facilitating their use in the most systematic and effective manner. It is the process of grouping the statistical data under various understandable homogeneous groups for the purpose of convenient interpretation.
There are three different approaches are the industry standard for data classification:

- Content-based classification
- Context-based classification
- User-based classification

Objectives of classification of data:

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- To group heterogeneous data under the homogeneous group of common characteristics;
- To facility similarity of the various group;
- To facilitate effective comparison;
- To present complex, haphazard and scattered dates in a concise, logical, homogeneous, and intelligible form;
- To maintain clarity and simplicity of complex data;
- To identify independent and dependent variables and establish their relationship;
- To establish a cohesive nature for the diverse data for effective and logical analysis;
- To make logical and effective quantification

A good classification should have the characteristics of clarity, homogeneity, and equality of scale, purposefulness, accuracy, stability, flexibility, and unambiguity.

Quantitative and Qualitative Data

Quantitative data are anything that can be expressed as a number, or quantified. Examples of quantitative data are scores on achievement tests, the number of hours of study, or weight of a subject. These data may be represented by ordinal, interval or ratio scales and lend themselves to most statistical manipulation.

Qualitative data cannot be expressed as a number. Data that represent nominal scales such as gender, social economic status, religious preference are usually considered to be qualitative data.

Tricks to Crack Data Interpretation

- The aim is to test not only quantitative skill but also relative, comparative and analytical ability.
- The crux of the matter is to find a relationship between the two tables or graphs before attempting the questions.
- Data Interpretation questions are based on information given in tables and graphs. These questions test your ability to interpret the information presented and to select the appropriate data for answering a question
- Get a general picture of the information before reading the question.

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- Avoid lengthy calculations generally, data interpretation questions do not require to do extensive calculations and computations. Most questions simply require reading the data correctly and carefully.
- Breakdown lengthy questions into smaller parts and eliminate impossible choices.
- Answer the questions asked and not what you think the questions should be.
- Tables are often used in reports, magazines and newspaper to present a set of numerical facts.

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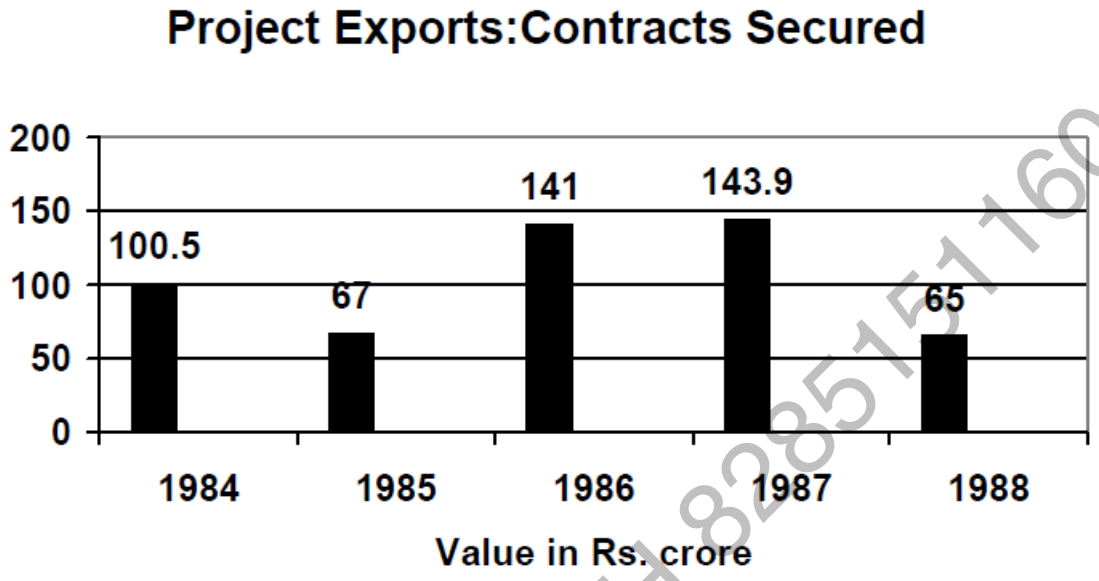
Data Interpretation: Set-1

Directions for Question 1 to 3: Refer to the following Bar-chart and answer the questions that follow:



Question 1: What is the average value of the contract secured during the years shown in the diagram?

(a) Rs. 103.48 crore

(b) Rs. 105 crore

(c) Rs. 100 crore

(d) Rs.125.2 crore

Question 2: Compared to the performance in 1985 (i.e. taking it as the base), what can you say about the performances in the years '84, '85, '86, '87, '88 respectively, in percentage terms?

(a) 150, 100, 211, 216, 97

(b) 100, 67, 141, 144, 65

(c) 150, 100, 200, 215, 100

(d) 120, 100, 220, 230, 68

Question 3: Which is the year in which the highest percentage decline is seen in the value of contract secured compared to the preceding year?

(a) 1985

(b) 1988

(c) 1984

(d) 1986

View Explanation

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Answer 1: a

(100.5 + 67 + 141 + 143.9 + 65)/5 = 103.48

Answer 2: a

As we see the table we see that the performance of only year i.e. 88 is less than the year 85. Hence the percentage corresponding to 1988 should be less than 100. Thus we see that (c) cannot be the answer.

Also (b) cannot be the answer as it shows two of the years having less than 100%.

Between options (a) and (d), the correct answer is (a). This is because the difference between the 1985 and 1988 performance is only 2 units on 67 units. Hence percentage-wise, it has to be 97% and not 68%.

Answer 3: b

The highest percentage decrease over the previous year is in year 1988 as in the table , and the performance is almost half than that of the previous year. Such a decrease is not seen in any other year, so the right answer is b

Data Interpretation: Set-2

- Data Interpretation Sets

- Comments: 5

The table below shows the estimated cost (in Rs. Lakh) of a project of laying a railway line between two places.

	1988	1989	1990	1991
1. Surveying	41.5	7.5	2.2	0.5
2. Cement	-	95.0	80.0	75.0
3. Steel	-	70.0	45.0	60.0
4. Bricks	-	15.0	12.0	16.0
5. Other building material	-	25.0	18.0	21.0
6. Labour	2.1	25.0	20.0	18.0
7. Administration	7.5	15.0	15.0	14.0
8. Contingencies	1.0	15.0	4.2	5.0
Total	**52.1**	**267.5**	**196.4**	**209.5**

Question 1: The total expenditure is required to be kept within Rs. 700 lakh by cutting the expenditure on administration equally in all the years. What will be the percentage cut for 1989?

(a) 22.6

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(b) 32.6
(c) 42.5
(d) 52.6
Question 2: If the length of line to be laid each year is in proportion to the estimated cost for material and labour, what fraction of the total length is proposed to be completed by the third year?
(a) 0.9
(b) 0.7
(c) 0.6
(d) 0.3

Question 3: What is the approximate ratio of the total cost of materials for all the years bear to the total labour cost?
(a) 4 : 1
(b) 8 : 1
(c) 12:1
(d) 16 : 1
Question 4: If the cost of materials rises by 5% each year from 1990 onwards, by how much will the estimated cost rise?
(a) Rs. 11.4 lakh
(b) Rs. 16.4 lakh
(c) Rs.21.4 lakh
(d) Rs.26.4 lakh
Question 5: It is found at the end of 1990, that the entire amount estimated for the project has been spent. If for 1991, the actual amount spent was equal to that which was estimated, by what percent (approximately) has the actual expenditure exceeded the estimated expenditure?
(a) 39
(b) 29
(c) 19
(d) 9
View Explanation
Answer 1: c
Total expenditure = 52.1+267.5+196.4+209.5 = 725.5 lakhs.
If it has to be kept within 700 lakhs, the expenditures has to reduce by 25.5 laks.
So the expenditure reduced each year will be (25.5/4) = 6.375 lakhs.
Hence, percentage reduce for 1989 would be = (6.375/15) × 100 = 42.5%.

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Answer 2: b

Costs of material and labor

1988 = 2.1

1989 = 95+70+15+25+25 = 230

1990 = 80+45+12+18+20 = 175

1991 = 75+60+16+21+18 = 190

Therefore proportion of these expenditures till 1990 = (2.1 + 230 + 175) / (2.1 + 230 + 175 + 190) = 0.6817.

This will also be the fraction of the total length of the line.

Answer 3: b

Total material cost = (95+80+75+70+45+60+15+12+16+25+18+21) = 532

Total labour cost = (2.1+25+20+18) = 65.1

Therefore the ratio = 532 : 65.1 = 8 : 1 (approximately)

Answer 4: b

The costs that can be taken under the head “Materials” are : Cement, steel, Bricks and Other building materials.

The estimated cost in 1990 = 80 + 45 + 12 + 18 = 155

The estimated cost in 1991 = 75 + 60 + 16 + 21 = 172

Cost of material rises by 5%,

Cost would rise by 0.05X (155 + 172) = Rs.16.35 lakhs.

Answer 5: b

Amount spent till 1990 = Rs.725.5 lakhs

Estimated Expenditure for 1991 = 209.5 lakhs.

Hence the increase in expenditure will be 209.5 on 725.5 = 28.87%.

Data Interpretation: Set-3

- Data Interpretation Sets

- Comments: 0

Directions for Question 1 to 4: The following graph shows the value of liquor supplied by the 5 states in 1996 and the excise duty rates in each state.

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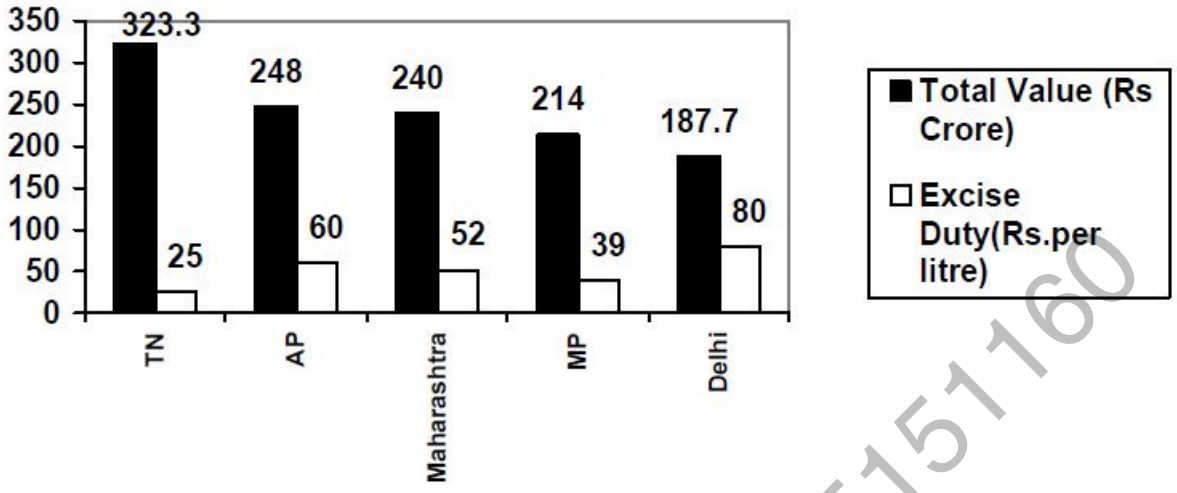
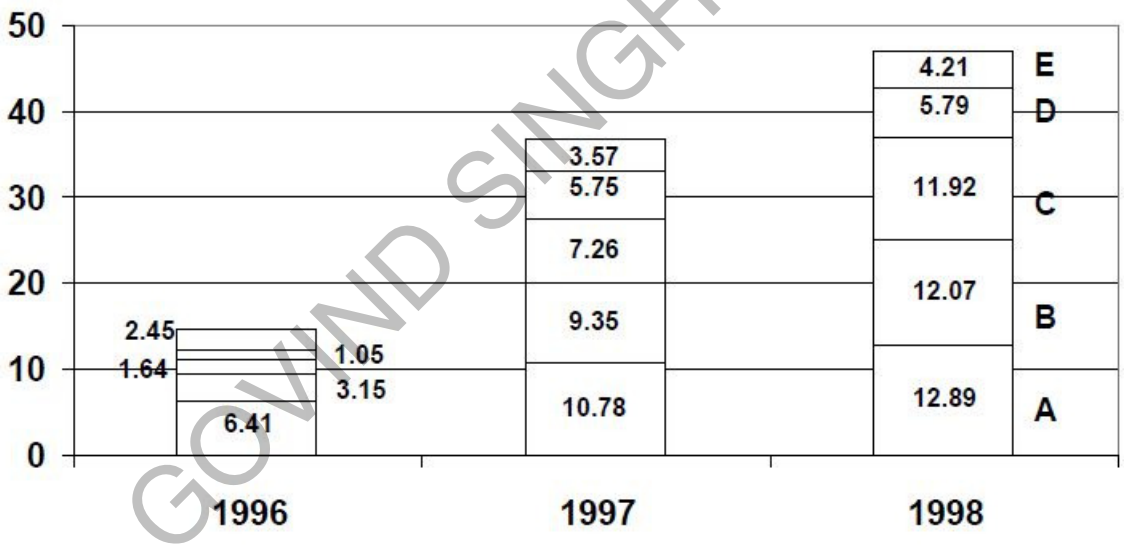


Amount of liquor supplied in Tamil Nadu Distilleries A, B, C, D, E (from bottom to top) in lakh litres.



1. What is the lowest percentage difference in the excise duty rates for any two states?
(a) 12
(b) 15
(c) 20
(d) Cannot be determined.

2. Which of the five states manufactured liquor at the lowest cost?
(a) Tamil Nadu
(b) Delhi

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(c) The states which has the lowest value for (wholesale price-Excise duty) per litre
(d) Cannot be determined.

3. If Excise duty is levied before the goods leave the factory (on the value of the liquor), then which of the following choices shows distilleries in ascending order of the excise duty paid by them for the year 1996? (Assume the total liquor in TN is supplied by only these 5 distilleries).
(a) ECABD
(b) ADEBC
(c) DCEBA
(d) Cannot be determined.

4. If the Tamil Nadu distillery, with the least average simple annual growth in amount of liquor supplied in the given period had shown the same rate of growth as the one which grew fastest, what would that company's supply have been in 1998, in lakh liters?
(a) 13
(b) 15.11
(c) 130
(d) Cannot be determined.

View Explanation

1. d
Since we don't know the excise duty of the other states, we cannot find the answers. So the answer of the question is option (d)

2. d
Here also the total value is given but nothing is mentioned about the amount of liquor manufactured by states other than Tamil Nadu. So the answer for the question is option (d)

3. c
Since Excise duty is collected on the total value of liquor produced by the 5 distilleries, this will be in the same order as the order of the amount of the liquor produced by them (as the excise duty rate remains constant). Hence the correct order is DCEBA.

4. b The simple average annual growth for the 5 distilleries in Tamil Nadu is as shown :

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Distillary	Calculation	Rate
A	(12.89 – 6.41)/(6.41 x 2)	50.54%
B	(12.07 – 3.15)/(3.15 x 2)	141.58%
C	(11.92 – 1.64)/(1.64 x 2)	313.41%
D	(5.79 – 1.05)/(1.05 x 2)	225.71%
E	(4.21 – 2.45)/(2.45 x 2)	35.91%

Distillery with highest growth rate is C
Distillery with lowest growth rate is E.
E grown by 313.41% in the 2 year period
So overall its supply in 1998 would be (2.45 x 616.82 /100) = 15.11 liters.

Data Interpretation: Set-4

- Data Interpretation Sets

- Comments: 0

Directions for the questions from 1 to 5: The following table gives the national income and the population of a country for the years 1984 – 85 to 1989 – 90. For each o the following questions choose the best alternative:

Year	National Income (in Rs. Crore)	Population (in crore)
1984-85	229,225	74.0
1985-86	261,174	75.0
1986-87	291,556	77.0
1987-88	329,934	78.5
1988-89	388,539	80.0
1989-90	433,500	81.5

1. The increase in the per capita income compared to the previous year is lowest for the year :
(a) 1985-86
(b) 1986-87

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(c) 1987-88
(d) 1989-90

2. The per capita income is highest for the year :
(a) 1984-85
(b) 1985-86
(c) 1987-88
(d) 1989-90

3. The difference between the percentage increase in per capita income and the percentage increase in the population compared to the previous year is highest for the year:
(a) 1985-86
(b) 1986-87
(c) 1987-88
(d) 1988-89

4. The rate of increase in population was lowest in the year:
(a) 1985-86
(b) 1987-88
(c) 1989-90
(d) None of these

5. Increase in the per capita income compared to the previous year among the years given below was highest for the year:
(a) 1985-86
(b) 1986-87
(c) 1987-88
(d) 1989-90

View Explanation

1. (b)

Year	Per Capita Income	increase over previous year
1984-85	3097.62	-
1985-86	3482.32	384.70
1986-87	3786.44	304.12
1987-88	4202.98	416.54
1988-89	4856.73	653.75
1989-90	5319.01	462.28

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The increase is lowest for the year 1986 – 87 = Rs. 304 .12

2. (d)
Per Capita Income=(National Income) / (Population)

Year	National Income (in Rs. Crore)	Population (in crore)	Per Capita Income
1984-85	229,225	74.0	3097.63
1985-86	261,174	75.0	3482.32
1986-87	291,556	77.0	3786.44
1987-88	329,934	78.5	4202.98
1988-89	388,539	80.0	4856.73
1989-90	433,500	81.5	5319.01

Per Capita Income is highest for the year 1989 – 90 = (433,500/81.5)=5319
3. (d)

Year	Population (in crore)	% increase over the previous year	Per Capita Income	% increase over the previous year	Difference in %
1984-85	74.0	-	3097.63	-	-
1985-86	75.0	1.35%	3482.32	12.43%	11.08
1986-87	77.0	2.66%	3786.44	8.73%	6.07
1987-88	78.5	1.94%	4202.98	11.01%	9.07
1988-89	80.0	1.91%	4856.73	15.56%	13.65
1989-90	81.5	1.87%	5319.01	9.51%	7.64

Hence it is highest for the year 1988-89 viz.13.65
4. (a)
From the table given for Q3, the rate of increase of population is lowest for the year 1985- 86 i.e 1.35%

5. (d)
From the table given for Q.3, the increase in per capita income compared to previous year is highest for the year 1989-90.

Data Interpretation: Set-5

- Data Interpretation Sets

- Comments: 0

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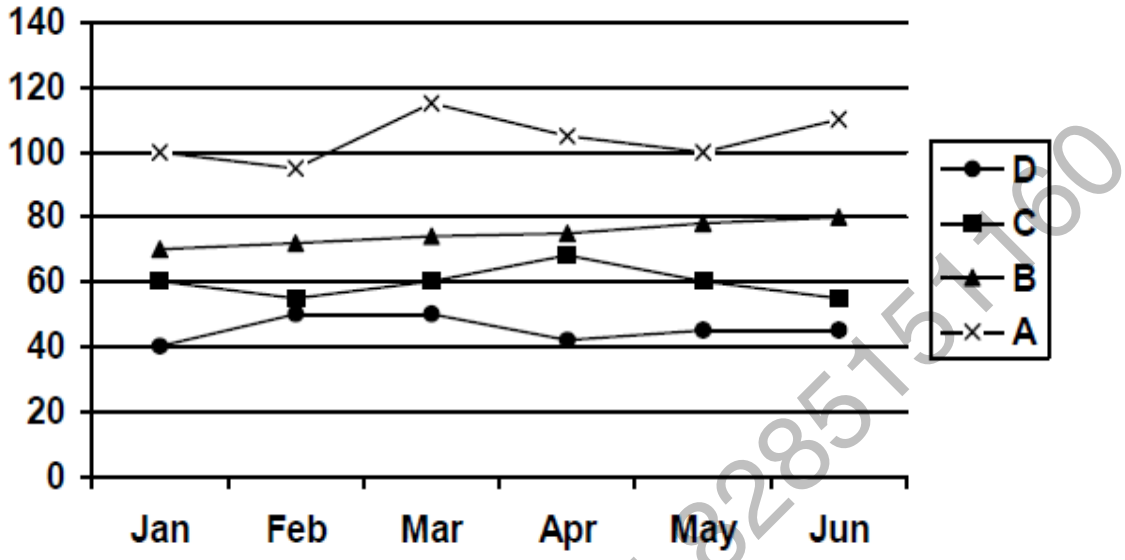
The graph below shows the end of the month market values of 4 shares for the period from January to June. Answer the following questions based on this graph.



Question 1: Which share showed the greatest percentage increase in market value in any month during the entire period?
(a) A
(b) B
(c) C
(d) D

Question 2: In which month was the greatest absolute change in market value for any share recorded?
(a) March
(b) April
(c) May
(d) June

Question 3: In which month was the greatest percentage increase in market value for any share recorded?
(a) February
(b) March
(c) April
(d) May

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Question 4: An individual wishes to sell 1 share of C and 1 share of D to buy 1 share of A at the end of a month. At which month-end would the individual's loss from this decision, due to share value changes, be the most?
(a) February
(b) March
(c) April
(d) June

Question 5: An individual decides to sell 1 share of C and 1 share of D to buy 1 share of A at the end of the month. What can be the individual's greatest gain from this decision, due to share value changes?
(a) 5
(b) 10
(c) 15
(d) none

View Explanation

Answer 1: d

From the table we clearly seen that highest % increase is for D in Feb. i.e 25%

	A	% Change	B	% Change	C	% Change	D	% Change
Jan	100	-	70	-	60	-	40	-
Feb	95	-5%	72	2.85%	55	-8.33%	50	25%
Mar	115	21%	74	2.77%	60	9.09%	50	-
Apr	105	-8.70%	76	2.70%	69	15%	41	-18%
May	100	-4.70%	78	2.63%	60	-13%	44	7.31%
Jun	110	10%	80	2.56%	55	-8.33%	45	2.27%

Answer 2: a

The greatest absolute change in the market value is 20
i.e. In the month of March the share of A = 115 – 95 = 20

Answer 3: a

The greatest percentage change in any share was recorded for share D for the month of February viz. 25%

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Answer 4: d

	C	D	Total Earning	A	Gain/ Loss
Jan	60	40	100	100	-
Feb	55	50	105	95	+5
Mar	60	50	110	115	-5
Apr	69	41	110	105	+5
May	60	44	104	100	+4
Jun	55	45	100	110	-10

Due to share value changes the maximum loss is 10 for the month of June.
Hence the answer is (d).

Answer 5: a
From the above table again we can see that the individual's highest gain is Rs.5.

Data Interpretation: Set-6

- Data Interpretation Sets

- Comments: 0

Answer the questions on the basis of the following information.
Prakash has to decide whether or not to test a batch of 1000 widgets before sending them to the buyer. In case he decides to test, he has two options: (a) Use test I ; (b) Use test II. Test I cost Rs. 2 per widget. However, the test is not perfect. It sends 20% of the bad ones to the buyer as good. Test II costs Rs. 3 per widget. It brings out all the bad ones. A defective widget identified before sending can be corrected at a cost of Rs. 25 per widget. All defective widgets are identified at the buyer's end and penalty of Rs. 50 per defective widget has to be paid by Prakash.

Question 1: Prakash should not test if the number of bad widgets in the lot is:
(a) less than 100
(b) more than 200
(c) between 120 & 190
(d) Cannot be found out.

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Question 2: If there are 120 defective widgets in the lot, Prakash:
(a) should either use Test I or not test.
(b) should either use Test II or not test.
(c) should use Test I or Test II.
(d) should use Test I only.

Question 3: If the number of defective widgets in the lot is between 200 and 400, Prakash:
(a) may use Test I or Test II
(b) should use Test I only.
(c) should use Test II only
(d) cannot decide.

Question 4: If Prakash is told that the lot has 160 defective widgets, he should:
(a) use Test I only
(b) use Test II only.
(c) do no testing.
(d) either use Test I or do not test.

Question 5: If there are 200 defective widgets in the lot, Prakash:
(a) may use either Test I or Test II
(b) should use Test I or not use any test
(c) should use Test II or not use any test.
(d) cannot decide.

View Explanation
Answer 1: a
Total number of batches = 1000
Let p be the total number of bad widgets
Therefore the total number of good ones will be (1000 –p).
On test I his total cost will be = Rs.2 (1000) + 25 x 0.8p + 50 x 0.2p
On test 2 his total cost will be = Rs. 3(1000) + 25 x p
Now, it will be worth testing if the cost of testing is less than the cost of penalty levied on the defective pieces. Let us check all the choices:

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No. of defectives	Cost of Test I	Cost of Test II	Penalty if not tested
100	Rs.5000	Rs.5500	Rs.5000
120	Rs.5600	Rs.6000	Rs.6000
160	Rs.6800	Rs.7000	Rs.8000
190	Rs.7700	Rs.7750	Rs.9500
200	Rs.8000	Rs.8000	Rs.10000
400	Rs.14000	Rs.13000	Rs.20000

Above 100 defectives cost is cheaper than the penalty.
But for 100 defectives the cost of penalty is the same as that for testing.
Therefore we come to this conclusion that below 100 defectives, the penalty will be less than the cost of testing and hence it is not worth testing.

Answer 2: d
If there are 120 widgets, he should go for test I as it is cheaper.

Answer 3: c
From the table we can say that if the number of defectives is between 200 & 400, he should go for Test II as it is cheaper.

Answer 4: a
In case of 160 defectives he should use test I as it is cheaper.

Answer 5: a
As the cost of both the Tests is same = Rs.8000.
Prakash may use either Test I or Test II for 200 widgets

Data Interpretation: Set-7

- Data Interpretation Sets

- Comments: 1

Study the following graph and answer questions that follow. The x – axis denotes the years from 1983 to 1991.

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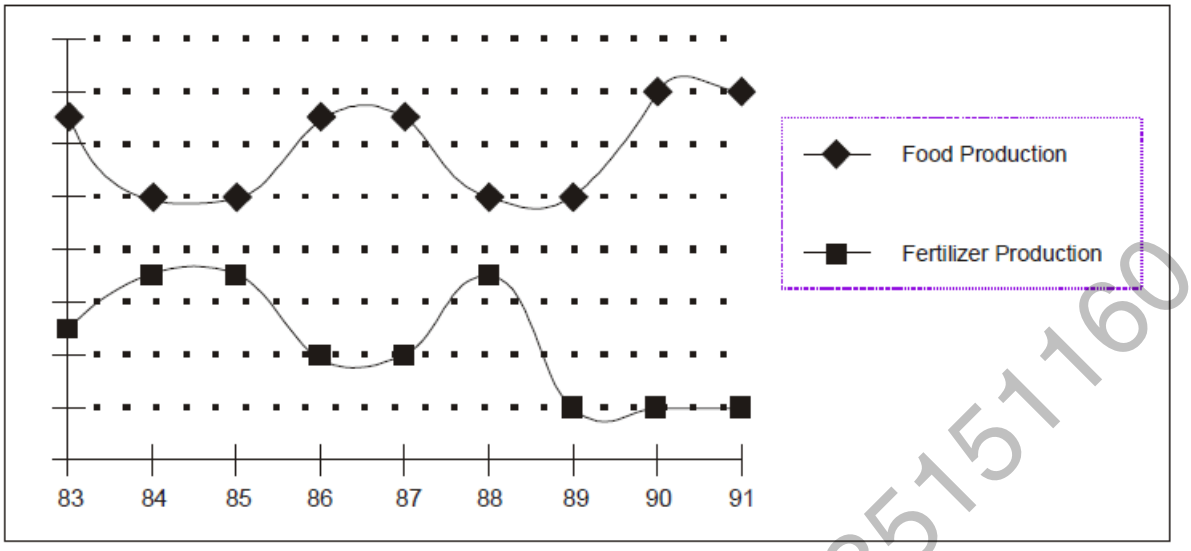

Question 1: The sum of food and fertilizer production has shown a constant value for how many years?
(a) None of the years
(b) 2
(c) 4
(d) 5

Question 2: If in 1988, the sum of the food and fertilizer production was 170 million tonnes, the value of food production must have been (approximately, in million tones) …
(a) 90
(b) 70
(c) 100
(d) Insufficient data

Question 3: From its apparent behavior, the food production in year 1992 can be expected to …
(a) go up
(b) go down
(c) remain the same as previous year.
(d) nothing can be said.

Question 4: Going according to previous trends, one can say that the Fertilizer Production has shown an anomalous behavior in which year?
(a) 1985
(b) 1984

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(c) 1991
(d) 1989

View Explanation

Since the values on the Y-axis are not given, we assume arbitrary values on the Y-axis. We assume that Y-axis begins from 0 and has increments of 2 each. The table below is tabulated on the basis of the above assumption.

Years	Food production	Fertilizer production
83	13	5
84	10	7
85	10	7
86	13	4
87	13	4
88	10	7
89	10	2
90	14	2
91	14	2

Answer 1: d

From the table , between 1984 and 1988, the value of sum of the food and the fertilizer is 17 which is constant for 5 years.

Answer 2: c

From the values, the production of fertilizer in 1988 is 7

And the production food is 10,

i.e. the sum of values is 17.

If the production corresponds to 170 million tones, then the food production should correspond to 100 million tones.

Answer 3: b

There is alternate increase and decrease in the graph of food production shows an in every 1 to 2 years. Hence by the graph of 1990 and 1991, it can be expected that the graph will go down in 1992.

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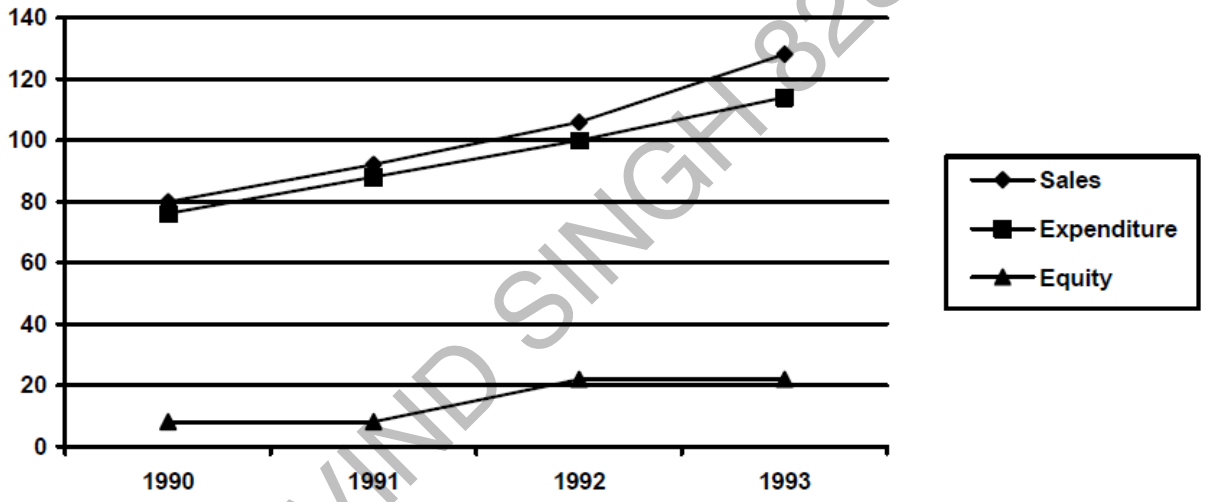
Answer 4: d
For two consecutive years the graph for fertilizer production remains constant.
This trend in 1989 breaks as it has a value of 2 instead of 7 in this year.

Data Interpretation: Set-8

- Data Interpretation Sets

- Comments: 0

Study the graph below and answer the questions that follow.



Question 1: In which year is the profit per rupee of equity the highest?
(a) 1991
(b) 1992
(c) 1993
(d) 1990 and 1991

Question 2: The simple annual growth rate in sales was the highest between the years?
(a) 1990 – 91
(b) 1991 – 92
(c) 1992 – 93
(d) 1990 – 92

Question 3: In which year are the sales per rupee of expenditure the lowest?
(a) 1990

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(b) 1991
(c) 1992
(d) 1993

Question 4: In which year is a sale per rupee of equity the highest?
(a) 1990
(b) 1991
(c) 1992
(d) 1994

View Explanation

Company	Sales (A)	Expand (B)	Profit C = (A–B)	Equity (D)	Pro/Equ C/D	Sal/Equ A/D	Sal/Exp A/B	Growth Rate Sales
1990	80	76	4	8	0.5	10	1.05	Nil
1991	92	88	4	8	0.5	11.5	1.04	5%
1992	106	100	6	22	0.27	4.81	1.06	15.21%
1993	128	114	14	22	0.51	5.81	1.12	20.75%

Answer 1: c
From the table It is clear that the profit per rupee of equity is highest for 1993 i.e. 0.51

Answer 2: c
The simple annual growth rate in sales is maximum for the year 1992-93 i.e. 20.75%

Answer 3: b
Sales per rupee of the expenditure are lowest for the year 1991 i.e. 1.04.

Answer 4: b
Sales per rupee of equity is highest for 1991 i.e. 11.5

Data Interpretation: Set-9

- Data Interpretation Sets

- Comments: 0

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Ghosh Babu has recently acquired four companies namely Arc – Net Technologies (ANT), Babu Anta Transport (BAT), Charles Anter Tailor (CAT) and Daud Akbar Transistors (DAT). When the results of the companies for the year 1992 – 93 were placed before him. He found a few interesting things about them. While the profits of CAT and DAT were the same, the sales of CAT were the same as those of BAT . Profits of ANT were 10% of its sales, where as the profits of BAT were 20% of its sales. While the total expenses of CAT were 5 times its profits, sales of DAT were 3 times its profits. The total expenses of CAT were Rs. 10,00,000, the total expenses of ANT were 10% less than those of CAT. Profits are defined as the difference between sales and total expenses.

Question 1: Which company had the lowest sales?
(a) ANT
(b) BAT
(c) CAT
(d) DAT

Question 2: Which company had the highest total expenses?
(a) ANT
(b) BAT
(c) CAT
(d) DAT

Question 3: Which company had the lowest profits?
(a) ANT
(b) BAT
(c) CAT
(d) DAT

Question 4: Which company had the highest profits?
(a) ANT
(b) BAT
(c) CAT
(d) DAT

View Explanation
Let the profits gained by the companies CAT & DAT = x,
Let the sale of the company CAT & BAT = y

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Let the sale of the company sales of ANT = z.
So we have

COMPANY	SALES	EXPENDITURE	PROFIT
ANT	z	0.9z	0.1z
BAT	y	0.8y	0.2y
CAT	y	5x	x
DAT	3x		x

First the total expenses of CAT were Rs.10 lakhs.
Therefore 5x = Rs.10 lakhs
or x = Rs.2 lakhs.
Also the difference between the total expenses of ANT and CAT = 10% = Rs.9 lakhs.
Therefore 0.9z = 9 lakhs
or z = 10 lakhs.
Since the Profit = Sales – Expenditure
And Sales = Expenditure + Profit
So ,6x = 12 lakhs. Hence y = 12 lakhs.
So from the above information the table would be

COMPANY	SALES	EXPENDITURE	PROFIT
ANT	10	9	1
BAT	12	9.6	2.4
CAT	12	10	2
DAT	6	4	2

(All values in lakh Rupees)

Answer1: (d)
From the above table it can be seen that the company with the lowest sales is DAT i.e . Rs.6 lakhs.

Answer 2: (c)
CAT had highest total expenses i.e. Rs. 10 lakhs.

Answer 3: (a)
ANT had lowest profits i.e. Rs. 1 lakh.

Answer 4: (b)
BAT had the highest profits i.e. Rs. 2.4 lakhs.

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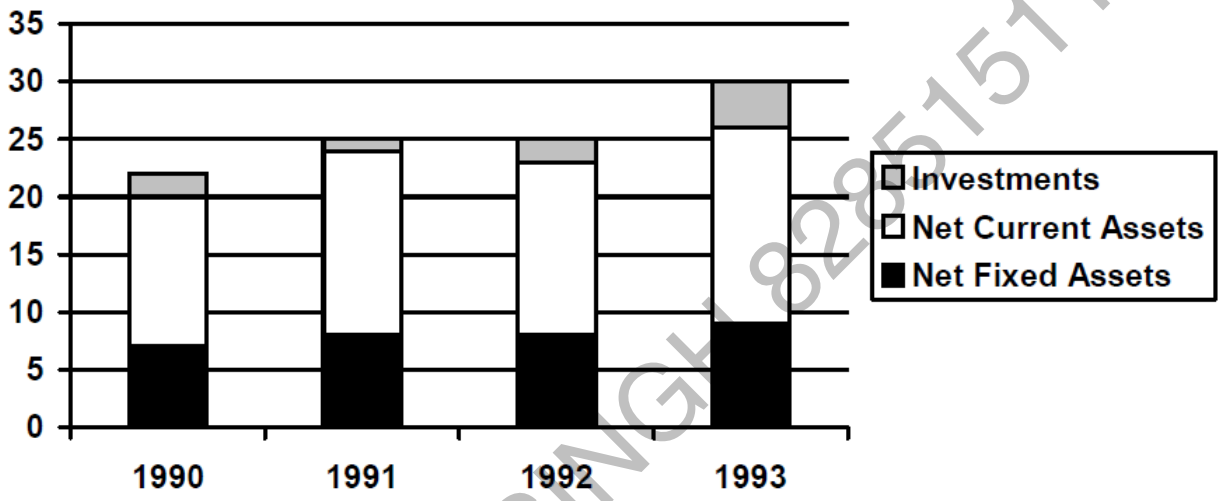
Data Interpretation: Set-10

- Data Interpretation Sets

- Comments: 0

Study the graph below and answer the questions that follow.



Total Assets are defined as Net Fixed Assets + Net Current Assets + Investments

Question 1: What is the approximate simple annual growth rate of Total Assets 1990 and 1993?
(a) 36%
(b) 12%
(c) 9%
(d) 27%

Question 2: In any two consecutive years, the growth rate is lowest for
(a) Net Fixed Assets.
(b) Net Current Assets.
(c) Investments.
(d) Total Assets.

Question 3: Between 1991 and 1992, the highest growth rate was seen for
(a) Net Fixed Assets

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(b) Net Current Assets.
(c) Investments.
(d) Total Assets.

Question 4: The only item which has not shown a negative growth in every year between 1990 and 1993 is
(a) Net Fixed Assets.
(b) Net Current Assets.
(c) Investments.
(d) Total Assets.

View Explanation

	Net Fixed Assets (NFA)	Growth Rate of NFA	Net Current Assets (NCA)	Growth Rate of (NCA)	Investments	Growth Rate of investments	Total Assets (TA)	Growth Rate of Total Assets
19	7	-	13	-	2	-	22	-
19	8	14.28%	16	23%	1	-50%	25	13.63%
19	7.5	-6.25%	15	-6.25%	2	100%	25	-
19	9	20%	17	13.33%	4	100%	30	20%

Answer 1: b
From the table we can see that the growth rate between 1990-93 of of total assets = (30-22)/22 = 36%.
But this is over a 3 year period.
Average annual growth rate = 36/3 = 12%.

Answer 2: c
The growth rate is lowest for investments in 1990-91 i.e. 50% decrease.

Answer 3: c
The highest growth rate was seen for 1991 & 1992 i.e 100% increase.

Answer 4: d
Each and every particular thing is shown , but the decrease in the total assets is not shown in this trend

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Data Interpretation: Set-11

- Data Interpretation Sets

- Comments: 0

A professor keeps data on students tabulated by performance and sex of the student. The data is kept on a computer disk, but unfortunately some of it is lost because of a virus. Only the following could be recovered:

	Performance			Total
	Average	Good	Excellent	
Male			10	
Female				32
Total		30		

Panic buttons were pressed but to no avail. An expert committee was formed, which decided that the following facts were self evident:

1. Half the students were either excellent or good.
2. 40% of the students were females.
3. One third of the male students were average.

Question 1: How many students were both female and excellent?
(a) 0
(b) 8
(c) 16
(d) 32

Question 2: How many students are both male and good?
(a) 10
(b) 16
(c) 22
(d) 48

Question 3: Among average students, what is the ratio of male to female?
(a) 1 : 2
(b) 2 : 1

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(c) 3 : 2
(d) 2 : 3

Question 4: What proportion of female students are good?
(a) 0
(b) 0.25
(c) 0.5
(d) 1.0

Question 5: What proportion of good students are male?
(a) 0
(b) 0.73
(c) 0.4
(d) 1.0

View Explanation

1. From the table it is given that the number of females is 32 and this number is 40% of the students. This means that the total number of students is 80 and the number of boys is 48
2. Now in the question we are given that half the students were excellent or good, Also, it is given that one third of the male students were average. So the number of male average students is 16
3. (Number of average students) = (number of good students + number of excellent students) = 40.
4. Total good students = 30
5. Therefore the number of excellent students = 40 – 30 = 10.
6. Also in the question it is mentioned that 1/3rd of male students were average, therefore total number of boys students that were good = (48 – 16 – 10) = 22.

Now from this information our graph will change into the following graph:

	Performance			Total
	Average	Good	Excellent	
Male	16	22	10	48
Female	24	8	0	32
Total	40	30	10	80

Answer 1: a
Number of students who are both female & excellent = 0.

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Answer 2: c
Number of students who are both male and good = 22.

Answer 3: d
Ratio of male to female among average students = 16/24 = 2:3.

Answer 4: b
Proportion of female students who are good = (8/32) = 0.25.

Answer 5: b
Proportion of good students who are male = (22/30) = 0.73.

Data Interpretation: Set-12

- Data Interpretation Sets

- Comments: 0

Given below are the forecasts of the World and Asian energy demand for the years 1990, 2000 and 2010 AD. The demand is given in million barrels per day, crude oil equivalent.

	1990		2000		2010	
	World	Asia	World	Asia	World	Asia
Petroleum	50.0	4.0	70.0	10.0	80.0	15.0
Natural Gas	30.0	0.5	40.0	2.5	50.0	5.0
Solid Fuels	50.0	4.0	60.0	5.0	75.0	10.0
Nuclear	10.0	0.5	20.0	1.0	25.0	1.3
Hydropower	10.0	1.0	10.0	1.5	20.0	2.0
Total	150.00	10.0	200.0	20.0	250.0	33.3

Question 1: Over 1990 – 2010, which two fuels meet more than 60 percent of the total energy demand of both World and Asia?
(a) Petroleum & Natural Gas
(b) Petroleum & Solid Fuels
(c) Natural Gas & Solid Fuels
(d) None of the above

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Question 2: Which fuel's proportion in the total energy demand increases over the decade 1990–2000 and decreases over the decade 2000 – 2010 for both the World and Asia?
(a) Petroleum
(b) Natural Gas
(c) Solid Fuels
(d) Nuclear

Question 3: Which is the fuel whose proportion in the total energy demand will decrease continuously over the period 1990 – 2010, in Asia?
(a) Natural Gas
(b) Solid Fuels
(c) Nuclear
(d) Hydropower

Question 4: Which is the fuel whose proportion to the total energy demand of the world will remain constant over the period 1990 – 2010 but whose proportion will increase in the total energy demand in Asia?
(a) Solid Fuels
(b) Nuclear
(c) Hydropower
(d) Natural Gas

View Explanation
Answer 1: b

		1990		2000		2010	
		World	Asia	World	Asia	World	Asia
Total Energy		150	10	200	20	250	33
Natural Gas	Value	30	1	40	1.5	50	2
	Proportion	20%	10%	20%	7.5%	20%	6.06%
Solid Fuels	Value	50	4	60	2.5	75	5
	Proportion	33.3%	40%	30%	12.5%	30%	15.1%
Petroleum	Value	50	4	70	10	80	15
	Proportion	33.3%	40%	35%	50%	32%	45.4%

From the table we can say that over 1990 – 2010, Solid Fuels and Petroleum combined meet more than 60 percent of the total energy demand of both the World and Asia.

Answer 2: a
From the table the fuel whose fuel's proportion in the total energy demand increases

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over the decade 1990–2000 and decreases over the decade 2000 – 2010 for both the World and Asia is Petroleum

Answer 3: d
This can be extracted with the help of following table:

		1990	2000	2010
Total Energy		**10**	**20**	**33**
Natural Gas	**Value**	0.5	2.5	5
	Proportion	5%	12.5%	15.15%
Solid Fuels	**Value**	4	5	10
	Proportion	40%	25%	30.3%
Nuclear	**Value**	0.5	1	1.3
	Proportion	5%	5%	3.9%
Hydropower	**Value**	1	1.5	2
	Proportion	**10%**	**7.5%**	**6.06%**

Hence proportion of Hydropower goes on decreasing over the period.

Answer 4: d
This is also can be extracted with the help of following table:

		1990	2000	2010
Total Energy		**150**	**200**	**250**
Natural Gas	**Value**	30	40	50
	Proportion	**20%**	**20%**	**20%**
Solid Fuels	**Value**	50	60	75
	Proportion	33.3%	30%	30%
Nuclear	**Value**	10	20	25
	Proportion	6.66%	10%	10%
Hydropower	**Value**	10	10	20
	Proportion	6.66%	5%	8%

Hence proportion of Natural gas remains constant over the given period.

Data Interpretation: Set-13

- Data Interpretation Sets

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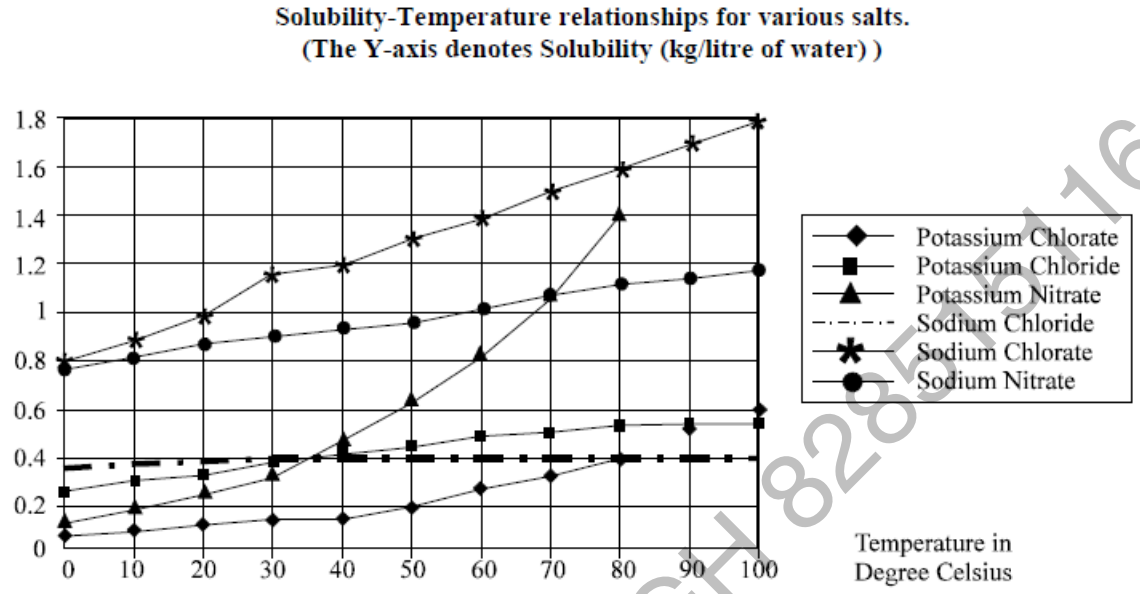
- Comments: 0

Question 1 to 5 are based on the graph given below:



Question 1: Which of the following salts has greatest solubility?
(a) Potassium Chlorate at 800C.
(b) Potassium Chloride at 350 C.
(c) Potassium Nitrate at 390 C.
(d) Sodium Chloride at 850 C.

Question 2: Approximately, how many kg of Potassium Nitrate can be dissolved in 10 liters of water at 300C?
(a) 0.04
(b) 0.4
(c) 4
(d) 0.35

Question 3: By what % is the solubility of Potassium Chlorate in water increased as the water is heated from 300C to 800 C?
(a) 100
(b) 200
(c) 250
(d) 300

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Question 4: If 1 mole of Potassium Chloride weighs 0.07456 kg, approximately. How many moles of Potassium Chloride can be dissolved in 100 liters of water at 360C?
(a) 700
(b) 650
(c) 480
(d) 540

Question 5: Which of the salts has greater change in solubility in kg / litre of water between 150C and 250C?
(a) Potassium Chlorate
(b) Potassium Nitrate
(c) Sodium Chlorate
(d) Sodium Nitrate

View Explanation

Option	Description	Solubility
(a)	Potassium Chlorate at 80°	0.4
(b)	Potassium Chloride at 35^0 C	0.4
(c)	Potassium Nitrate at 39^0 C	**0.48**
(d)	Sodium Chloride at 85^0 C	0.4

Answer 1: C
Refer to the picture above. Hence (c) is the correct answer.

Answer 2: c
The solubility of potassium nitrate in one litter at 300C = 0.38 kg
Therefore solubility of potassium nitrate in 10 lt. would be = 3.8 kg., Approx = 4 kg.
Therefore the right answer is option (c)

Answer 3: d
The increase in % of solubility of potassium chlorate = (0.4 – 0.1) 100/0.1 = 300%.

Answer 4: d
The Solubility of potassium chloride at 36oC = 0.4 kg./lt.
Therefore in 100 lt. the amount of Potassium chloride that can be dissolved = 40 kg.
Number of moles = 40 / 0.075 = 533.
Therefore approx. 540 moles can be dissolved in 100 lt. of water at 36oC.

Answer 5: c
The solubility of sodium nitrate, potassium chloride, sodium chloride, is almost constant

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as we see the graph between 15oC &25oC,.
Therefore it is also can be seen from graph that solubility of sodium chlorate is maximum.

Data Interpretation: Set-14

- Data Interpretation Sets

- Comments: 0

In 1984 – 85 value of exports of manufactured articles exceeds over the value of exports of raw materials by 100%. In 1985 – 86 the ratio of % of exports of raw material to that of exports of manufactured articles is 3 : 4. Exports of food in 1985 – 86 exceeds the 1984 – 85 figures by Rs. 1006 crore.

Item	1984-85	1985-86
Food		23%
Manufactured Articles		
Raw Material		
Total Value of Exports in Crore of Rs.	22400	25800

Question 1: In 1984 – 85 what percentage of total values of exports accounts for items related to food

(a) 23%
(b) 29.2%
(c) 32%
(d) 22%

Question 2: During 1984 – 85, how much more raw material than food was exported?
(a) Rs. 2580 crore
(b) Rs. 896 crore
(c) Rs. 1986 crore
(d) Rs. 1852 crore

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Question 3: Value of exports of raw materials during 84 – 85 was how much percent less than that for 85 – 86?
(a) 39
(b) 46.18
(c) 7
(d) 31.6

Question 4: The change in value of exports of manufactured articles from 1984 – 85 to 1985 – 86 is
(a) 296 crore
(b) 629 crore
(c) 2064 crore
(d) 1792 crore

View Explanation
From the data that is given we can extrapolate the following data:

Item	1984-85	1985-86
Food (Percentage)	22%	23%
Food (Value)	4928	5934
Manufactured Articles	11648	11352
Raw Material	5824	8514
Total Value of Exports in Crore of Rs.	22400	25800

Answer 1: d
The exports related to food in 85-86 = 0.23 x 25800 = 5934.
Therefore the exports related to food 1984-95 = (5934 – 1006) = 4928.
Therefore the percentage food related exports in 84-85 = 4928/22400 = 22%.

Answer 2: b
The Value of Manufactured articles & Raw materials exports In 84-85, = (22400 – 4928) = Rs.17472 crore. Since Export in manufactured goods is twice that of raw materials, Therefore the ratio of export of manufactured goods and raw materials is 2:1
Therefore export of manufactured goods = Rs.11648 crore and Raw materials = Rs.5824 crore
Hence the difference between raw material and food = (5824 – 4928) = Rs.896 crore

Answer 3: d
The combined percentage of Manufactured articles and Raw materials in 85-86 = 77%

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And therefore the ratio will be 4 : 3.
Therefore the percentage of Manufactured articles export = 44%
The percentage of Raw materials export = 33%.
Therefore value of manufactured = 0.44 x 25800 = Rs.11352 crore
And the value of Raw materials = Rs.8514 crore
Therefore the percentage difference between the value of Raw materials between 84-85 and 85-86 = [(8514 – 5824)/8514] × 100 = 31.6%

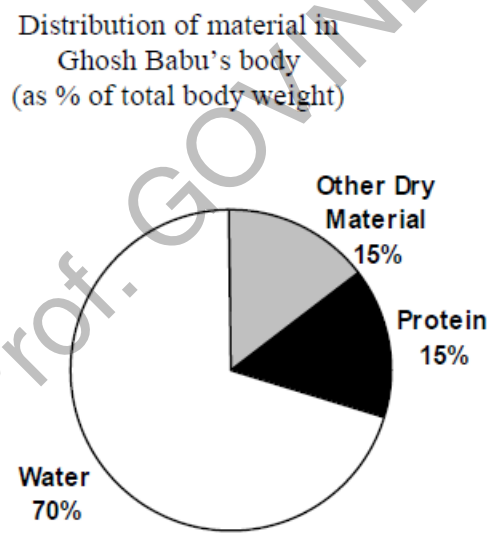
Answer 4: a
The change in value of exports of manufactured articles from 1984 – 85 to 1985 – 86 = (11648 – 11352) = Rs.296 crore

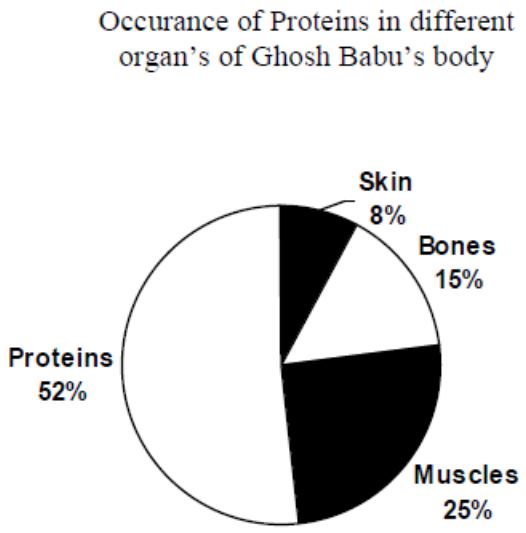
Data Interpretation: Set-15

- Data Interpretation Sets

- Comments: 0

Direction for 1 to 4: Refer to the pie-chart given below:





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Question 1: What fraction of Ghoshbabu's weight consists of muscular and skin protein?
(a) 1/13
(b) 1/30
(c) 1/20
(d) Cannot be determined

Question 2: Ratio of distribution of protein in muscle to the distribution of protein in skin is
(a) 3 : 1
(b) 3 : 10
(c) 1 : 3
(d) 31/2 : 1

Question 3: What percent of Ghosh Babu's body weight is made up of skin?
(a) 0.15
(b) 10
(c) 1.2
(d) Cannot be determined

Question 4: In terms of total body weight, the portion of material other than water and protein is closest to
(a) 3/20
(b) 1/15
(c) 85/100
(d) 1/20

View Explanation

Answer 1: c
From the pie chart we can say that the percentage of the total protein constituted by the skin & muscular protein is only 33 %
And the total protein in the body = 15 % of the total body weight
Therefore percentage of skin & muscular protein as a fraction of the total body weight = 33% of 15% = 5 %. = 1/20.

Answer 2: a
Ratio of distribution of protein in muscle to the distribution of protein in skin is
= 25 : 8 = 3 : 1

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Answer 3: d
Since we do not have data about the percentage of skin in Ghosh Babu's body , therefore we cannot determine the answer for this question

Answer 4: a
The portion of material other than water and protein is closest to
15/100 = 3/20.

Data Interpretation: Set-16

- Data Interpretation Sets

- Comments: 1

The following table gives the sales details for text books and reference books at Primary / Secondary/ Higher Secondary/ Graduate Levels.

Year	Primary	Secondary	Higher Secondary	Graduate Level
1975	42137	8820	65303	25343
1976	53568	10285	71602	27930
1977	58770	16437	73667	28687
1978	56872	15475	71668	30057
1979	66213	17500	78697	33682
1980	68718	20177	82175	36697

Question 1: What is the growth rate of sales of books at primary school level from 1975 to 1980?
(a) 29%
(b) 51%
(c) 63%
(d) 163%

Question 2: Which of the categories shows the lowest growth rate from 1975 to 1980?
(a) Primary
(b) Secondary

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(c) Higher secondary
(d) Graduate Level

Question 3: Which category had the highest growth rate in the period?
(a) Primary
(b) Secondary
(c) Higher secondary
(d) Graduate Level

Question 4: Which of the categories had either a consistent growth or a consistent decline in the period shown?
(a) Primary
(b) Secondary
(c) Higher secondary
(d) Graduate Level

View Explanation

Answer 1: c

Since we can see that the answer options are not too close to each other so we can take the approximate values. So the required ratio = (68600 – 42000) 100 / 42000 = 2650 / 42 = 63%

Books	1975	1980	Percentage growth
Primary	42137	68718	66%
Secondary	8820	20177	125%
Higher Secondary	65303	82175	26%
Graduate Level	25343	36697	45%

Answer 2: c

From the table it is shown that percentage growth is least for higher secondary books i.e. 26%.

Answer 3: b

From the given table in answer we can see that the percentage growth rate is maximum for secondary level books i.e.125%.

Answer 4: d

We can see that primary, secondary and higher secondary level books have all suffered from some sort of a decrease at a certain point of time, and have not shown a

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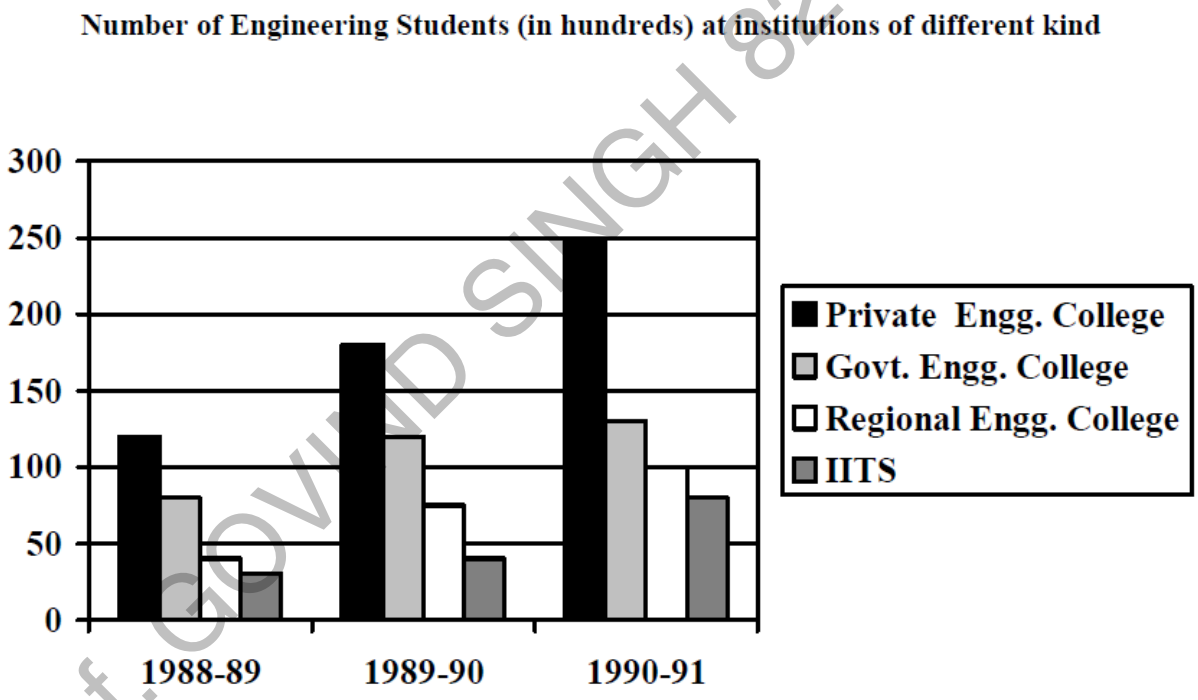
consistent decline or increase. But on the other hand, all the graduate level books have shown a consistent growth over the period.

Data Interpretation: Set-17

- Data Interpretation Sets

- Comments: 0

Direction for 1 to 4: Analyze the table and answer the questions carefully



Question 1: What was the total number of engineering students in 1989 – 90?
(a) 28500
(b) 4400
(c) 4200
(d) 42000

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Question 2: The growth rate in students of Govt. Engg. Colleges compared to that of Private Engg. Colleges between 1988 – 89 and 1989 – 90 is
(a) more
(b) less
(c) equal
(d) 3/2

Question 3: The total number of Engg. Students in 1991 – 92, assuming a 10% reduction in the number over the previous year, is
(a) 5700
(b) 57000
(c) 44800
(d) none of these

Question 4: In 1990 – 91, what percent of Engg. Students were studying at IIT's?
(a) 16
(b) 15
(c) 14
(d) 12

View Explanation

College	1988-89	1989-90	1990-91
Private Engg. College	120	180	250
Govt. Engg. College	80	120	130
Regional Engg. College	40	75	100
IIT	30	40	80

Answer 1: d
From the table we can say that Total number of students in 1989–90 = (180 + 120 + 75 + 40) x 100 = 41500 = 42000 (approx)

Answer 2: c
Growth rate (Govt. Engg. College) = (120 – 80) / 80 = 50%
Growth rate (Private Engg. College) = (180 – 120) / 120 = 50%.
Hence the growth rate is equal.

Answer 3: d
Total number of students in 1990–91 = (250 + 130 + 100 + 80) 100 = 56000,
Hence the total number of students in 1991-92 = 0.9 x 56000 = 50400.
Hence (d) is the correct answer

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Answer 4: c
% of IIT students in 1990 – 91 = 80 / 570 = 1/7 = 14% (approx.)

Data Interpretation: Set-18

- Data Interpretation Sets

- Comments: 0

Bankatlal works x hours a day and rests y hours a day. This pattern continues for 1 week, with an exactly opposite pattern next week, and so on for four weeks. Every fifth week he has a different pattern. When he works longer than he rests, his wage per hour is twice what he earns per hour when he rests longer than he works. The following are his daily working hours for the weeks numbered 1 to 13:

	1st week	5th week	9th week	13th week
Rest	2	3	4	-
Work	5	7	6	8

A week consists of six days and a month consists of 4 weeks.

Question 1: If Bankatlal is paid Rs. 20 per working hour in the 1st week. What is his salary for the 1st month?
(a) Rs.1760
(b) Rs.1440
(c) Rs.1320
(d) Rs.1680

Question 2: Referring to the data given in Q.1, Bankatlal's average monthly salary at the end of the first four months will be
(a) Rs.1780
(b) Rs.2040
(c) Rs.1830
(d) Rs.1680

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Question 3: The new manager Khushaldas stipulated that Rs.5 be deducted for every hour of rest and Rs. 25 be paid per hour starting 9th week, then what will be the change in Bankatlal's salary for the 3rd month? (Hourly deductions are constant for all weeks starting 9th week)
(a) Rs.540
(b) Rs.480
(c) Rs.240
(d) Rs.120

Question 4: Using the data in the previous questions, what will be the total earning of Bankatlal at the end of sixteen weeks:
(a) Rs.7320
(b) Rs.7800
(c) Rs.8400
(d) Rs.9600

View Explanation
The data given in the question can be computed as:

Answer 1: b
From the data we can say about the performance and the strategy of Bankatlal for the 1st month

First Month :

	1st week	2nd week	3rd week	4th week
Hours of rest	2	5	2	5
Working hrs.	5	2	5	2
Wage per hour	Rs.20	Rs.10	Rs.20	Rs.10
Total Wage per day	Rs.100	Rs.20	Rs.100	Rs.20
Total Wage per week	Rs.600	Rs.120	Rs.600	Rs.120

Thus his total wage = (600+120+600+120) = Rs.1440

Answer 2: c
Let check the data for second third and fourth month

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Second Month :

	5th week	6th week	7th week	8th week
Hours of rest	3	7	3	5
Working hrs.	7	3	7	2
Wage per hour	Rs.20	Rs.10	Rs.20	Rs.10
Total Wage per day	Rs.140	Rs.30	Rs.140	Rs.30
Total Wage per week	Rs.840	Rs.180	Rs.840	Rs.180

Third Month :

	9th week	10th week	11th week	12th week
Hours of rest	4	6	4	6
Working hrs.	6	4	6	4
Wage per hour	Rs.20	Rs.10	Rs.20	Rs.10
Total Wage per day	Rs.120	Rs.40	Rs.120	Rs.40
Total Wage per week	Rs.720	Rs.240	Rs.720	Rs.240

Fourth Month :

	13th week	14th week	15th week	16th week
Hours of rest	0	8	0	8
Working hrs.	8	0	8	0
Wage per hour	Rs.20	Rs.10	Rs.20	Rs.10
Total Wage per day	Rs.160	0	Rs.160	0
Total Wage per week	Rs.960	0	Rs.960	0

From the above pictures we can say about
Total wage for 1st month = Rs.1440
Total wage for 2nd month = (840+180+840+180) = Rs.2040
Total wage for 3rd month = (720+240+720+240) = Rs.1920
Total wage for 4th month = (960+960) = Rs.1920
Total wage for the 4 months = (1440+2040+1920+1920) = 7320
Hence the average salary = 7320/4 = Rs.1830

Answer 3: d
From the extracted data above we can say about the wage for the third month:

Third Month :

	9th week	10th week	11th week	12th week
Hours of rest	4	6	4	6
Working hrs.	6	4	6	4
Wage per hour or work	Rs.25	Rs.12.5	Rs.25	Rs.12.5
Fine per hour of rest	Rs.5	Rs.5	Rs.5	Rs.5
Total wage per day	Rs.150	Rs.50	Rs.150	Rs.50
Total fine per day	Rs.20	Rs.30	Rs.20	Rs.30
Effective wage per day	Rs.130	Rs.20	Rs.130	Rs.20
Total Wage per week	Rs.780	Rs.120	Rs.780	Rs.120

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So now his third month wage = (780+120+780+120) = Rs.1800.
Initially he earned Rs.1920 in the third month.
Therefore change in Bankatlal's salary for the 3rd month = (1920 – 1800) = Rs.120.

Answer 4: d
For the fourth month:

Fourth Month :

	9th week	10th week	11th week	12th week
Hours of rest	0	8	0	8
Working hrs.	8	0	8	0
Wage per hour or work	Rs.25	Rs.12.5	Rs.25	Rs.12.5
Fine per hour of rest	Rs.5	Rs.5	Rs.5	Rs.5
Total wage per day	Rs.400	0	Rs.400	0
Total fine per day	0	Rs.40	0	Rs.40
Effective wage per day	Rs.400	-Rs.40	Rs.400	-Rs.40
Total Wage per week	Rs.2400	-Rs.240	Rs.2400	-Rs.240

So now his total wage for the 4th month = (2400+2400-240-240) = Rs.4320.
Since the initial calculations are based on old schemes, the initial wages for the first two months are:
Total wage for 1st month = Rs.1440
Total wage for 2nd month = Rs.2040
Calculation for the third and fourth month are as per new calculations:
Total wage for 3rd month = Rs.1800
Total wage for 4th month = Rs.4320
So total salary for the four months = (1440+2040+1800+4320) = Rs.9600

Data Interpretation: Set-19

- Data Interpretation Sets

- Comments: 0

Direction for questions 1 to 4: Answer the questions based on the following information.
Ghosh Babu surveyed his companies and obtained the following data. Income tax is paid from profit before tax and the remaining amount is apportioned to dividend and retained earnings. The retained earnings were accumulated into reserves. The reserves at the beginning of 1991 were Rs. 80 lakh.

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Figure (Rs. in lakh)	1994	1993	1992	1991
Share capital	0310	0205	0098	0098
Sales	6435	4725	2620	3270
Profit before tax	0790	0525	0170	0315
Dividends	0110	0060	0030	0030
Retained earnings	0400	0245	0070	0140

Question 1: In which year was the tax per rupee of 'profit before tax' lowest?
a. 1991
b. 1992
c. 1993
d. 1994

Question 2: In which year was the sales per rupee of share capital highest?
a. 1991
b. 1992
c. 1993
d. 1994

Question 3: In which year the profit before tax per rupee of sales was the highest?
a. 1991
b. 1992
c. 1993
d. 1994

Question 4: In which year was the percentage addition to reserves over previous years reserves the highest?
a. 1991
b. 1992
c. 1993
d. 1994

Question 5: Amount of the reserves at the end of 1994 is
a. Rs. 935 lakh
b. Rs. 915 lakh

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c. Rs. 230 lakh
d. None of these

View Explanation

Answer 1: d

As we know that (Dividends + Retained earnings) = (Profit before tax) – Tax.

Tax = (Profit before tax) – (Dividends + Retained earnings).so from the table we can say that

Figure (Rs. in lakh)	1994	1993	1992	1991
Share capital	0310	0205	0098	0098
Sales	6435	4725	2620	3270
Profit before tax	0790	0525	0170	0315
Dividends	0110	0060	0030	0030
Retained earnings	0400	0245	0070	0140

Tax per rupee of ' profit before tax' is lowest for 1994.

Answer 2: a

	1991	1992	1993	1994
Sales	3270	2620	4725	6435
Share Capital	98	98	205	310
Sales per rupee of share capital	33.36	26.73	23.04	20.75

Therefore from the table we can say that the sales per rupee of the share capital is highest for 1991.

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Answer 3:d

	1991	1992	1993	1994
Profit before tax	315	170	525	790
Sales	3270	2620	4725	6435
Profit before tax per rupee of sales	0.09	0.06	0.11	0.12

Hence, profit before tax per rupee of sales is highest for 1994.

Answer 4:a

	1991	1992	1993	1994
Reserves	80	220	290	535
Retained earnings	140	70	245	400
Percentage addition to reserves	175%	31%	84%	75%

Hence, we find that the highest percentage addition to reserves is in 1991.

Answer 5:a
From the above table it is clear that the amount of reserves at the end of 1994 = (535 + 400) = Rs. 935 lakh.

Data Interpretation: Set-20

- Data Interpretation Sets

- Comments: 0

Direction for questions 1 to 5: Answer the questions based on the following table.

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Market share in four metropolitan cities				
Period/ Product	Mumbai 1993-94	Kolkata 1993-94	Delhi 1993-94	Chennai 1993-94
HD	20-15	35-30	20-15	20-30
CO	20-25	30-15	15-10	20-15
BN	45-40	25-35	35-35	10-10
MT	15-20	10-20	10-10	50-45

Question 1: The maximum percentage decrease in market share is
a. 60%
b. 50%
c. 53.3%
d. 20%

Question 2: The city in which minimum number of products increased their market shares in 1993-94 is
a. Mumbai
b. Delhi
c. Kolkata
d. Chennai

Question 3: The market shares of which products did not decreased between 1993-94 in any city?
a. HD
b. CO
c. BN
d. None of these

Question 4: The number of products which had 100% market share in four metropolitan cities is
a. 0
b. 1

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c. 2
d. 3

Question 5: The number of products which doubled their market shares in one or more cities is
a. 0
b. 1
c. 2
d. 3

View Explanation
Answer 1. b
From the table, the market share of CO in Kolkata has halved. It is the only product which shows such a drastic decrease in any city.
Hence, percentage of this decrease = 50%.

Answer2. b
It is clear from the table that the market shares only increased by two cities Mumbai and Kolkata, on the other hand, Chennai has 1, while Delhi has none.

Answer 3. d
The market share of HD decreased in Mumbai, Kolkata and Delhi.
The market share of HD decreased in Mumbai, Kolkata and Delhi.
The market share of CO decreased in Kolkata, Delhi and Chennai and the market share of BN decreased in Mumbai.
So none of these is the right answer

Answer 4. a
None of the products has 100% market share.

Answer 5. b
From the given data in the table we can say that the market share is doubled by MT only in KOLKATA in 1993-94.

Data Interpretation: Set-21

- Data Interpretation Sets

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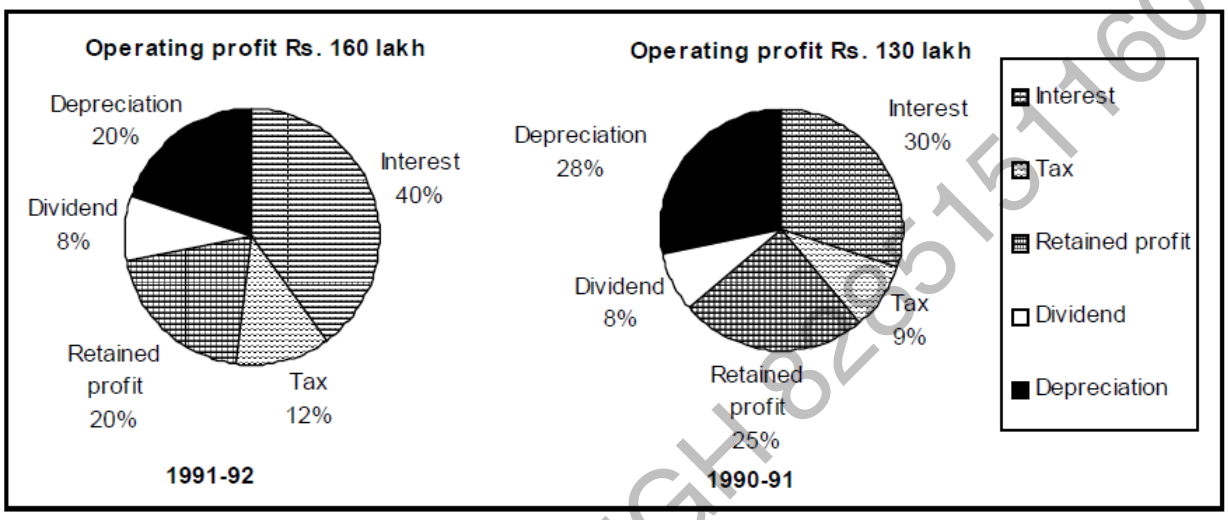
- Comments: 0

Direction for questions 1 to 5: Answer the questions based on the following pie charts.



Question 1: The operating profit in 1991-92 increased over that in 1990-91 by
a. 23%
b. 22%
c. 25%
d. 24%

Question 2: The interest burden in 1991-92 was higher than that in 1990-91 by
a. 50%
b. Rs. 25 lakh
c. 90%
d. Rs. 41 lakh

Question 3: If on an average, 20% rate of interest was charged on borrowed funds, then the total borrowed funds used by this company in the given two years amounted to
a. Rs. 221 lakh
b. Rs.195 lakh
c. Rs. 368 lakh
d. Rs. 515 lakh

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Question 4: The retained profit in 1991-92, as compared to that in 1990-91 was
a. higher by 2.5%
b. higher by 1.5%
c. lower by 2.5%
d. lower by 1.5%

Question 5: The equity base of these companies remained unchanged. Then the total dividend earning by the share holders in 1991-92 is
a. Rs. 104 lakh
b. Rs. 9 lakh
c. Rs. 12.8 lakh
d. Rs. 15.6 lakh

View Explanation

Answer 1. a
Percentage increase = (160 – 130)100/130 = 300/13 = 23%

Answer 2: b
From the pie chart we can calculate that Interest in 1990-91 = 30% of 130 = Rs. 39 lakh
Interest in 1991-92 = 40% of 160 = Rs. 64 lakh
Hence, difference = (64 – 39) = Rs. 25 lakh

Answer 3: d
From the pie chart we can say that Total interest = (30% of 130) + (40% of 160) = (39 + 64)
= Rs. 103 lakh.
If borrowed funds is charged by interest , then (20% of borrowed funds) = 103.
Hence, borrowed funds
= (5 × 103) = Rs. 515 lakh.

Answer 4: d
From the pie chart
Retained profit in 1990-91 = (25% of 130) = Rs. 32.5 lakh
Retained profit in 1991-92 = (20% of 160) = Rs. 32 lakh
Hence, percentage change in retained profit = (32.5 – 32)/ 32.5 = 1.5% lower

Answer 5: c
Total dividend in 1991-92
= (8% of 160) = Rs. 12.8 lakh.

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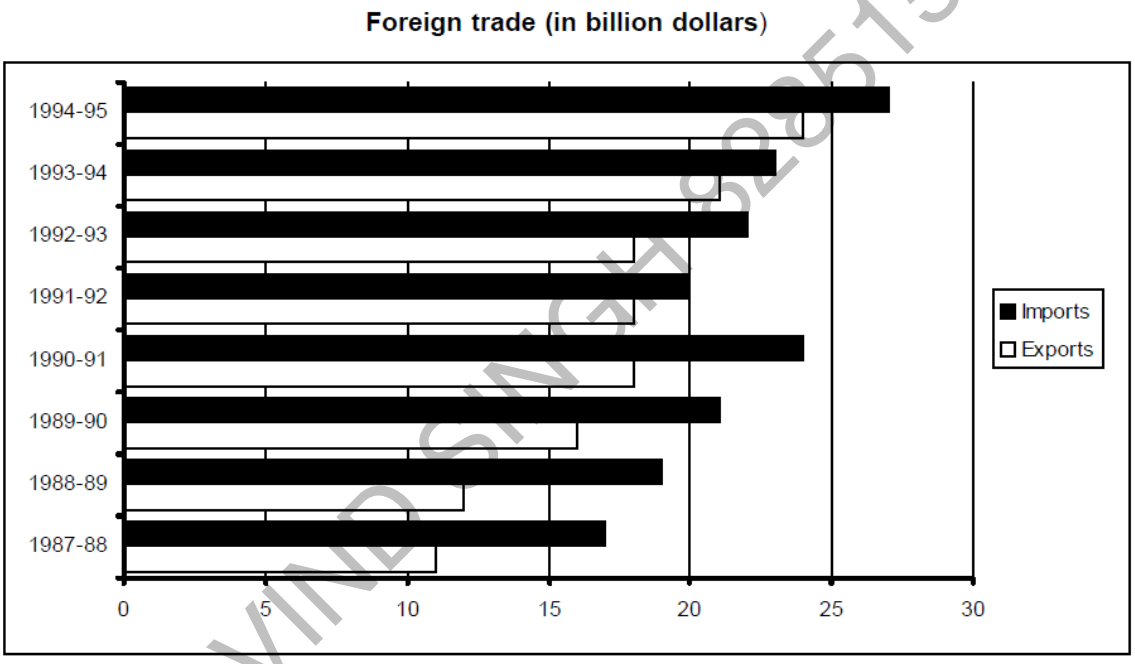
Data Interpretation: Set-22

- Data Interpretation Sets

- Comments: 0

Directions for question 1 to 4: Follow the bar graph and answer the following question



Question 1. In which year was the trade deficit highest?
a. 1987-88
b. 1988-89
c. 1989-90
d. 1990-91

Question 2. In how many years was the trade deficit less than the trade deficit in the succeeding year?
a. 1
b. 2
c. 3
d. 4

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Question 3. Export earning in 1990-91 is how many per cent of imports in 1991-92?
a. 82%
b. 85%
c. 90%
d. 15%

Question 4. In the last three years the total export earnings have accounted for how many per cent of the value of the imports?
a. 80%
b. 83%
c. 95%
d. 88%

View Explanation
By analyzing the data above, we can construct the following table:

Year	Import	Export	Trade Deficit
1987-88	17	11	6
1988-89	19	12	7
1989-90	21	16	5
1990-91	24	18	6
1991-92	20	18	2
1992-93	22	18	4
1993-94	23	21	2
1994-95	27	24	3
	173	138	

Answer 1: b
We know that Trade deficit = Imports – Exports

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Therefore from the table we can say that TD is highest for the year 1988-89, viz. 7 billion dollars.

Answer 2: d
Again Trade deficit is less than the trade deficit in the succeeding years in 1987-88, 1989-90, 1991-92 and 1993-94.

Answer 3: c
Required percentage = 18/20 = = 90%

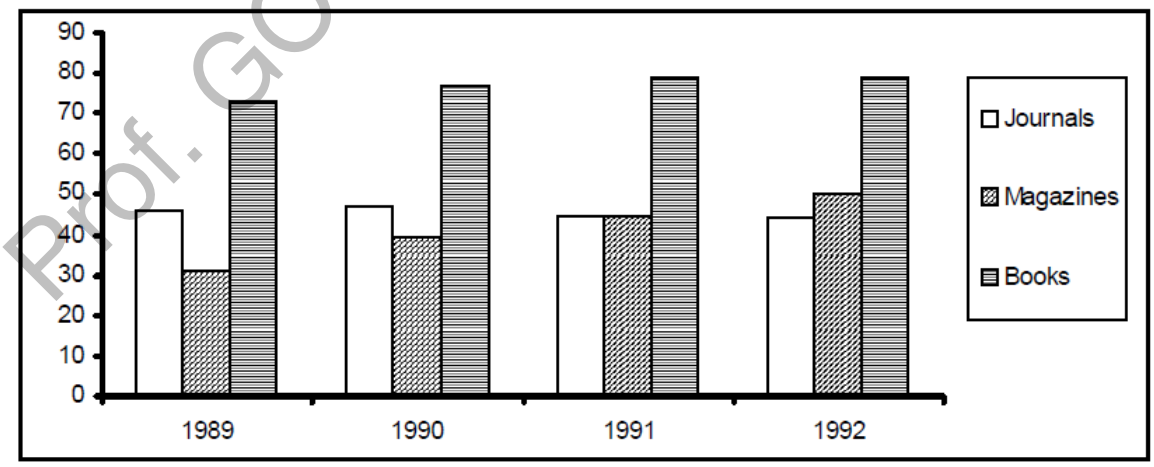
Answer 4: d
In last three years, Imports = (22 + 23 + 27) = 72 and Exports = (18 + 21 + 24) = 63.
Hence, the required percentage = 63/72 = 87.5 % = 88% approx.

Data Interpretation: Set-23

- Data Interpretation Sets

- Comments: 0

Direction for questions 1 to 4: Answer the questions based on the following graph.
Revenue obtained by a publishing house while selling books, magazines and journals (Rs. in lakh).



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Question 1: Which year shows the highest change in revenue obtained from journals?
a. 1989
b. 1990
c. 1991
d. 1992

Question 2: In 1992, what per cent of the total revenue came from books?
a. 45%
b. 55%
c. 35%
d. 25%

Question 3: The number of years in which there was an increase in revenue from at least two categories is
a. 1
b. 2
c. 3
d. 4

Question 4: If 1993 were to show the same growth as 1992 over 1991, the revenue in 1993 must be
a. Rs. 194 lakh
b. Rs. 187 lakh
c. Rs. 172 lakh
d. Rs. 177 lakh

View Explanation

The graph given in the question can be depicted in the following table:

	1989	1990	1991	1992
Journals	46	47	45	44
Magazines	31	39	45	50
Books	73	77	79	79
Total	150	163	169	173

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Answer 1. c
The highest change in the revenue obtained from journals is (47 – 45) = 2 in 1991.

Answer 2. a
In 1992 percentage of total revenue that came from books = 79/173 = 45.6%

Answer 3. b
From the figure we can see that the revenue increased in all three categories in 1990. In 1991 it increased for magazines and books whereas in 1992 it increased only for magazines. So the answer is b, i.e. 2 years.

Answer 4.d
Growth rate in 1992 over 1991 = (173 – 169) / 169 = 2.36 %
If this rate were to remain same in 1993 as well, then the revenue in 1993 will be 173 x (1 + 2.36/100) = 1.77 lakhs

Data Interpretation: Set-24

- Data Interpretation Sets

- Comments: 0

Answer the questions based on the following information.
A company produces five types of shirts — A, B, C, D and E — using cloth of three qualities — high, medium and low -, using dyes of three qualities — high, medium and low. One shirt requires 1.5 m of cloth. The following table gives respectively:
1. The number of shirts (of each category) produced, in thousands
2. The percentage distribution of cloth quality in each type of shirt, and
3. The percentage distribution of dye quality in each type of shirt

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		Distribution of cloth (%)				Distribution of dye (%)			
Shirt type	Number in thousands	Shirt type	High	Medium	Low	Shirt type	High	Medium	Low
A	20	A	80	20	–	A	70	15	15
B	30	B	30	40	30	B	20	50	30
C	30	C	–	70	30	C	–	60	40
D	10	D	–	60	40	D	–	40	60
E	10	E	–	10	90	E	–	20	80

Question 1: What is the total requirement of cloth?
a. 1,50,000 m
b. 2,00,000 m
c. 2,25,000 m
d. 2,50,000 m

Question 2: How many metres of low-quality cloth is consumed?
a. 22,500 m
b. 46,500 m
c. 60,000 m
d. 40,000 m

Question 3: How many metres of high quality cloth is consumed by A-type shirts?
a. 8,000 m
b. 112,000 m
c. 24,000 m
d. 30,000 m

Question 4: What is the ratio of the three qualities of dyes in high-quality cloth?
a. 2 : 3 : 5
b. 1 : 2 : 5
c. 7 : 9 : 10
d. Cannot be determined

Question 5: What is the ratio of low-quality dye used for C-type shirts to that used for D-type shirts?
a. 3 : 2

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b. 2 : 1
c. 1 : 2
d. 2 : 3

View Explanation
Answer 1: a
Total requirement of cloth
= Total number of shirts × Cloth required per shirt
= (20 + 30 + 30 + 10 + 10) 1000 × 1.5 = 1,50,000 m.

Answer 2: b
Total low quality cloth consumed
= 1.5 (30% of 30000 + 30% of 30000 + 40% of 10000 + 90% of 10000) = 46,500 m.

Answer 3: c
Total quantity of high quality cloth consumed by A-type shirts = (80% of 20000) × 1.5 = 24,000 m.

Answer 4: d
From the given data we only know the relationship between the type of shirt and cloth used and type of shirt and dye used. So we don't have idea about type of cloth and dye used.

Answer 5: b
Amount of low quality die used for C-type shirts = (40% of 30000) = 12,000 units.
Amount of low quality die consumed by D-type shirts = (60% of 10000) = 6,000 units.

Data Interpretation: Set-25

- Data Interpretation Sets

- Comments: 0

Direction for questions 1 to 5: Answer the questions based on the following information.

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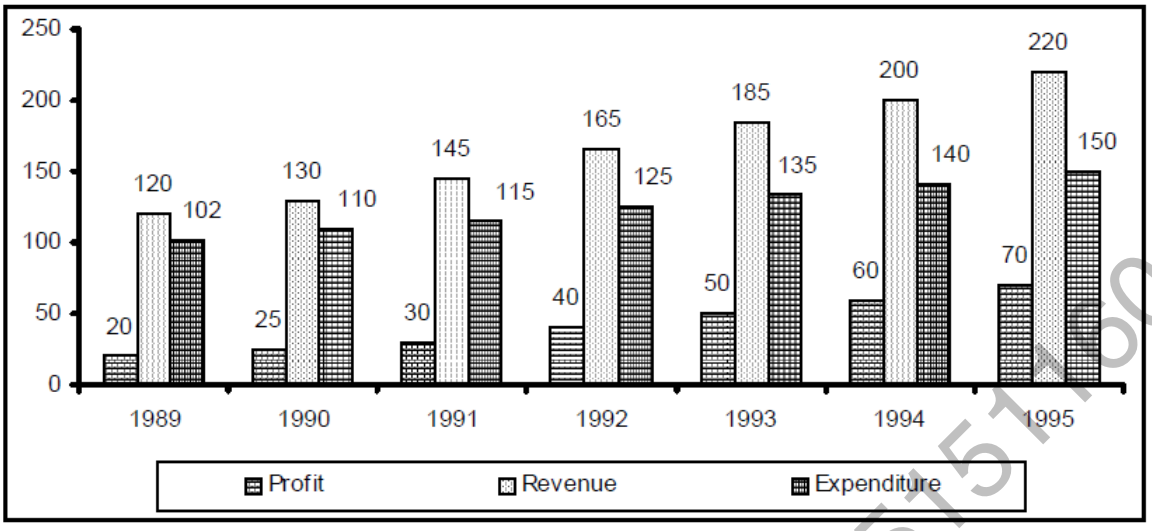

Question 1: The average revenue collected in the given 7 years is approximately
a. Rs. 164 lakh
b. Rs. 168 lakh
c. Rs. 171 lakh
d. Rs. 175 lakh

Question 2: The expenditure for the 7 years together form what per cent of the revenues during the same period?
a. 75%
b. 67%
c. 62%
d. 83%

Question 3: Which year showed the greatest percentage increase in profit as compared to the previous year?
a. 1993
b. 1994
c. 1990
d. 1992

Question 4: In which year was the growth in expenditure maximum as compared to the previous year?
a. 1993
b. 1995
c. 1991
d. 1992

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Question 5: If the profit in 1996 shows the annual rate of growth as it had shown in 1995 over the previous year, then what approximately will be the profit in 1996?
a. Rs. 72 lakh
b. Rs. 82 lakh
c. Rs. 93 lakh
d. Rs. 78 lakh

View Explanation
Answer 1: b
Average will be equal to = (120 +130 +145+ 165 +185 +200 +220)/7 = 166.42
This is approximately is Rs. 168 lakh.

Answer 2:a
If we add the expenses of 7 years then it will add up to 877.
And Revenue of 7 years add up to 1165.
Hence, the required answer is (877/1165)*100 = 75.5 % approx.

Answer 3: d
To find the answer we have to find the profit in each year.

Year	Profit percentage
1990	(5/20) × 100 = 25%
1991	(5/25) × 100 = 20%
1992	(10/30) × 100 = 33.33%
1993	(10/40) × 100 = 25%
1994	(10/50) × 100 = 20%
1995	(10/60) × 100 = 16.66%

From the above table, clearly, the answer is 1992, as in 1992 the profit is maximum, i.e. 33.33%.

Answer 4: d
The following table shows the expenditure over the previous year:

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Year	Growth in expenditure
1990	(8/202) × 100 = 7.8%
1991	(5/110) × 100 = 4.5%
1992	(10/115) × 100 = 8.7%
1993	(10/125) × 100 = 8%
1994	(5/135) × 100 = 3.7%
1995	(10/140) × 100 = 7.14%

Hence, it is maximum for 1992.

Answer 5: b
Profit in 1994 = 60. Profit in 1995 = 70. Growth percentage in profit in 1995 over 1994 = (10/60) x 100 = 16.66%, Profit in 1996 will be (16.66% of 70) + 70 = Rs. 82 lakh.

Data Interpretation: Set-26

- Data Interpretation Sets

- Comments: 0

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Directions for the question 1 to 5: Answer the questions based on the following information, which gives data about certain coffee producers in India.

	Production ('000 tonnes)	Capacity utilisation (%)	Sales ('000 tonnes)	Total sales value (Rs. in crores)
Brooke Bond	2.97	76.50	2.55	31.15
Nestle	2.48	71.20	2.03	26.75
Lipton	1.64	64.80	1.26	15.25
MAC	1.54	59.35	1.47	17.45
Total (including others)	11.60	61.30	10.67	132.80

Directions for the question 1 to 5: Answer the questions based on the following information, which gives data about certain coffee producers in India.

	Production ('000 tonnes)	Capacity utilisation (%)	Sales ('000 tonnes)	Total sales value (Rs. in crores)
Brooke Bond	2.97	76.50	2.55	31.15
Nestle	2.48	71.20	2.03	26.75
Lipton	1.64	64.80	1.26	15.25
MAC	1.54	59.35	1.47	17.45
Total (including others)	11.60	61.30	10.67	132.80

Question 1: What is the maximum production capacity (in '000 tonnes) of Lipton for coffee?
a. 2.53
b. 2.85
c. 2.24
d. 2.07

Question 2: Which company out of the four companies mentioned above has the maximum unutilized capacity (in '000 tonnes)?
a. Lipton
b. Nestle

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c. Brooke Bond
d. MAC

Question 3: What is the approximate total production capacity (in '000 tonnes) for coffee in India?
a. 18
b. 20
c. 18.7
d. Data insufficient

Question 4: The highest price for coffee per kilogram is for
a. Nestle
b. MAC
c. Lipton
d. Data insufficient

Question 5: What percent of the total market share (by sales value) is controlled by 'others'?
a. 60%
b. 32%
c. 67%
d. insufficient data

View Explanation

Answer 1: a
The production of Lipton is 1.64 (in '000 tonnes) which corresponds to 64.8% capacity.
Now the capacity for 64.8% is 1.64
So for 100% it will be = (100/64.8) x 1.64 = 2.53 approx. in 000 tones

Answer 2: d
Unutilized capacity can be represented in the following manner.

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	Production ('000 tonnes)	Capacity utilisation (%)	Total capacity (100%)	Unutilised capacity
	A	sB	C = A/B ×100	C - A
Brooke Bond	2.97	76.50	3.88	0.912
Nestle	2.48	71.20	3.48	1.003
Lipton	1.64	64.80	2.53	0.89
MAC	1.54	59.35	2.59	1.05

Hence, we find that the maximum unutilized capacity is for MAC, i.e. 1,050 tones.

Answer 3: c
61.3 % ≡ 11.6
100% = 100/61.3 x11.6 =18.7 approx.

Answer 4: d
From the given data, we cannot say anything about the price of coffee for the companies among others.

Answer 5: b
Total sales of all brands = (31.15 + 26.75 + 15.25 + 17.45) = Rs. 90.6 crore
Total sales value of others = 132.8 – 90.6 = Rs. 42.2 crore
Required percentage = 42.2/132.8 x 100 = 32.5 approx.

Data Interpretation: Set-27

- Data Interpretation Sets

- Comments: 0

Direction for questions 1 to 5: Answer the questions based on the following information.
Mulayam Software Co., before selling a package to its clients, follows the given schedule.

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Month	Stage	Cost (Rs. '000 per man /month)
1-2	Specification	40
3-4	Design	20
5-8	Coding	10
9-10	Testing	15
11-15	Maintenance	10

The number of people employed in each month is:

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number of people employed	2	3	4	3	4	5	5	4	4	1	3	3	1	1	1

Question 1: Due to overrun in 'design', the design stage took 3 months, i.e. months 3, 4 and 5. The number of people working on design in the fifth month was 5. Calculate the percentage change in the cost incurred in the fifth month. (Due to improvement in 'coding' technique, this stage was completed in months 6-8 only.)

a. 225%
b. 150%
c. 275%
d. 240%

Question 2: With reference to the above question, what is the cost incurred in the new 'coding' stage? (Under the new technique, 4 people work in the sixth month and 5 in the eighth.)

a. Rs. 1,40,000
b. Rs. 1,50,000
c. Rs. 1,60,000
d. Rs. 1,70,000

Question 3: What is the difference in cost between the old and the new techniques?

a. Rs. 30,000

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b. Rs. 60,000
c. Rs. 70,000
d. Rs. 40,000

Question 4: Under the new technique, which stage of software development is most expensive for Mulayam Software Co.?
a. Testing
b. Specification
c. Coding
d. Design

Question 5: Which five consecutive months have the lowest average cost per man-month under the new technique?
a. 1-5
b. 9-13
c. 11-15
d. None of these

View Explanation

Answer 1: b
Originally 4 people were scheduled for the fifth month to do coding
Therefore the cost for them (10000 × 4) = Rs. 40,000.
Now there is increase in number of men from 4 to 5 who are working on design in the fifth month.
Therefore the cost changes and the total cost for this would be (20000 × 5) = Rs.1,00,000.
Therefore the percentage change in the in the cost incurred in the fifth month = {(100000 – 40000)/40000} x 100 = 150%

Answer 2: a
With the help of last question we will come to know that the coding stage is now completed in 6th, 7th and 8th months. We also know that the number of people employed in the 6th month is 4 and in the 8th month is 5 and by the month 7th there are 5 people employed (from previous data).
Therefore by combining all the months we find that the total cost incurred in the coding stage = (5 + 5 + 4) × 10000 = Rs.1,40,000.

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Answer 3: b
The difference in the cost will arise only because of the following months: 5, 6 and 8. And we can compare the costs as given below

	Original scheme			New scheme		
Month	**People**	**Cost per man/ month**	**Total cost for the month**	**People**	**Cost per man/ month**	**Total cost for the month**
5	4	10000	40000	5	20000	1,00,000
6	5	10000	50000	4	10000	40,000
8	4	10000	40000	5	10000	50,000
	Total cost		**Rs. 1,30,000**	**Total cost**		**Rs. 1,90,000**

It can be clearly seen that the difference in the cost between the old and the new technique is Rs. 60,000.

Answer 4: d
The cost incurred in various stages under the present scheme is as given below.

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	Month	People	Cost per man/ month	Total cost for the month	Total cost for the stage
Specification	1	2	40000	80000	Rs. 2,00,000
	2	3	40000	120000	
Design	3	4	20000	80000	Rs. 2,40,000
	4	3	20000	60000	
	5	5	20000	100000	
Coding	6	4	10000	40000	Rs. 1,40,000
	7	5	10000	50000	
	8	5	10000	50000	
Testing	9	4	15000	60000	Rs. 75,000
	10	1	15000	15000	
Maintenance	11	3	10000	30000	Rs. 90,000
	12	3	10000	30000	
	13	1	10000	10000	
	14	1	10000	10000	
	15	1	10000	10000	

Hence, the most expensive stage is Design.

Answer 5: c
From the above table it is clear that the average cost for 5 consecutive month period is lowest for months 11 to 15.

Data Interpretation: Set-28

- Data Interpretation Sets

- Comments: 0

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Direction for questions 1 to 4: Answer the questions based on the following information. The amount of money invested (rupees in crores) in the core infrastructure areas of two districts, Chittoor and Khammam, Andhra Pradesh, is as follows.

Chittor district			Khammam district		
Core area	**1995**	**1996**	**Core area**	**1995**	**1996**
Electricity	815.2	1054.2	**Electricity**	2065.8	2365.1
Chemical	389.5	476.7	**Chemical**	745.3	986.4
Thermal	632.4	565.9	**Thermal**	1232.7	1026.3
Solar	468.1	589.6	**Solar**	1363.5	1792.1
Nuclear	617.9	803.1	**Nuclear**	1674.3	2182.1
Total	2923.1	3489.5	**Total**	7081.6	8352.0

Question 1: By what per cent was the total investment in the two districts more in 1996 as compared to 1995?
a. 14%
b. 21%
c. 24%
d. 18%

Question 2: The investment in electricity and thermal energy in 1995 in these two districts formed what per cent of the total investment made in that year?
a. 41%
b. 47%
c. 52%
d. 55%

Question 3: In Khammam district, the investment in which area in 1996 showed the highest percentage increase over the investment in that area in 1995?
a. Electricity
b. Chemical
c. Solar
d. Nuclear

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Question 4: Approximately how many times was the total investment in Chittoor to the total investment in Khammam?
a. 2.8
b. 2
c. 2.4
d. 1.7

View Explanation
Answer 1: d
Total investment in the two districts in 1995 = 2932.1+ 7081.6 ≈ 10,000.
Total investment in the two districts in 1996 = 3489.5 + 8352 ≈ 11840.
Required percentage = (11840 – 10000)/10000 = 18%(approx.)

Answer 2: b
Total investment in electricity and thermal energy in both the districts in 1995 = (815.2 + 632.4 + 2065.8 + 1232.7) = 4746.1.
Total investment made in that year = 2923.1 + 7081.6 = 10004.7 ≈ 10000
Hence required percentage = (4746.1/10000) = 47% (approx.)

Answer 3: b
Percentage increase in investment in electricity = 30/2070 = 14%
Percentage increase in investment in chemical= {(986.4 – 745.3)/745.31} x 100 = 240/745 = 32%
Percentage increase in investment in solar = (428.6/1792.1)
let's take the approximate values = 430/1792 = 23%
And the Percentage increase in investment in nuclear = 507/1674 approximately = (500/1670)x 100 = 23%
Clearly percentage increase in investment in chemical is the highest

Answer 4: c
Total investment in Chittoor = 2923.1 + 3489.5 = 6412.6 ≈ 6410.
Total investment in Khammam = 7081.6 + 8352 ≈ 15430.
Required ratio = (15430/6410) = 2.4 times

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ICT

Common Computer Abbreviations

• AGP – Accelerated Graphic Port
• PC – Personal Computer
• EPROM – Erasable Programmable Read Only Memory
• BIOS – Basic Input and Output System
• HDD – Hard Disk Drive
• PCI – Peripheral Component Interconnect
• UNIVAC – Universal Automatic Computer
• GUI – Graphic User Interface
• USB – Universal Serial Bus

• VGA – Visual Graphic Adaptor

• MAN – Metropolitan Area Network
• ASCII – American Standard Code for Information Interchange
• WAN – Wide Area Network
• EBCDIC – Extended Binary Coded Decimal Interchange Code
• LAN – Local Area Network
• EEPROM/EAPROM – Electrical Erasable/Alterable Programmable Read Only Memory
• CPU – Central Processing Unit
• OS – Operating System
• ALU – Arithmetic and Logic Unit
• DVD – Digital Versatile Disc
• CD – Compact Disk
• ROM – Read Only Memory
• VDU – Visual Display Unit
• RAM – Random Access Memory
• ICT – Information Communication Technology
• PROM – Programmable Read Only Memory
• URL – Uniform Resource Locator
• IDE – Integrated Drive Electronics
• FORTRAN – Formular Translator

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• MOS – Metaoxide Semi Conductor
• ATX – Advanced Technology Extended
• SIM – Subscriber Identification Module
• MHZ – Megahertz
• ISP – Internet Service Provider
• GHZ – Gigahertz
• DBMS – Database Management System
• SQL – Structured Query Language
• RW – Re-Writeable
• SDT – Serial Data Transmission
• CAN – Campus Area Network
• SIMMs – Single In-line Memory Module
• PAN – Personal Area Network
• DIMMs – Dual In-line Memory Module
• CMOS – Complimentary Metaoxide Semi Conductor
• ENIAC – Electronic Number Integrator and Calculator
• CMD – Command
• EDSAC – Electronic Dialog Storage Automatic Computer
• MAC – Media Access Control
• IC – Integrated Circuit

• LSIC – Large Scale Integrated Circuit

• DIR – Directory
• GIGO – Gabbage in Gabbage Out
• PHP – PHP Hypertext Preprocessor
• DOC – Document
• PDT – Parallel Data Transmission
• PDA – Personal Digital Assistant
• USSD – Unstructured Supplementary Service Data
• WWW – World Wide Web
• COBOL – Common Basic Oriented Language
• CCNP – Cisco Certified Network Professionals
• BASIC – Beginner All Purpose Symbolic Instruction Code
• CEH – Certified Ethical Hacking
• TCP – Transmission Control Protocol
• CSS – Cascading Style Sheet
• CISCO – Computer Information System Company
• XXS – Cross Site Scripting
• XML – Extensible Mark-up Language
• HTML – Hypertext Markup Language
• CCNA – Cisco Certified Network Associate
• RFI – Remote File Inclusion

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• HTTP –Hypertext Transfer Protocol
• DDOS –Distribution Denial of Service
• VPN –Virtual Private Network
• SEO –Search Engine Optimization
• IP - Internet Protocol

Operating Systems and Data Storage Based

- BIOS – This is the Basic Input Output System which controls the computer, telling it what operations to perform. These instructions are on a chip that connects to the motherboard.
- BYTE – A byte is a storage unit for data.
- CPU – This stands for the Central Processing Unit of the computer. This is like the computer's brain.
- MAC – This is an abbreviation for Macintosh, which is a type of personal computer made by the Apple Computer company.
- OS – This is the Operating System of the computer. It is the main program that runs on a computer and begins automatically when the computer is turned on.
- PC – This is the abbreviation for personal computer. It refers to computers that are IBM compatible.
- PDF – This represents the Portable Document Format which displays _les in a format that is ready for the web.
- RAM – This stands for Random Access Memory which is the space inside the computer that can be accessed at one time. If you increase the amount of RAM, then you will increase the computer's speed. This is because more of a particular program is able to be loaded at one time.
- ROM – This is Read Only Memory which is the instruction for the computer and cannot be altered.
- VGA – The Video Graphics Array is a system for displaying graphics. It was developed by IBM.
- WYSIWYG – This initialism stands for What You See Is What You Get. It is pronounced "wizziwig" and basically means that the printer will print what you see on your monitor.
- FTP – This is a service called File Transport Protocol which moves a _le between computers using the Internet.
- HTML – Hyper Text Markup Language formats information so it can be transported on the Internet.
- HTTP – Hypertext Transfer Protocol is a set of instructions for the software that controls the movement of files on the Internet.
- IP – This stands for Internet Protocol which is the set of rules that govern the systems connected to the Internet. IP Address is a digital code specific to each computer that is hooked up to the Internet.
- ISP – The Internet Service Provider is the company which provides Internet service so you can connect your computer to the Internet.

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- LAN – This stands for Local Area Network which is the servers that your computer connects to in your geographic area.
- PPP – Point-to-Point Protocol is the set of rules that allow your computer to use the Internet protocols using a phone line and modem.
- URL – This is the Uniform Resource Locator which is a path to a certain le on the World Wide Web.
- USB – The Universal Serial Bus is used for communications between certain devices. It can connect keyboards, cameras, printers, mice, ash drives, and other devices. Its use has expanded from personal computers to PDAs, smart phones, and video games, and is used as a power cord to connect devices to a wall outlet to charge them.
- VR – Virtual Reality simulates a three-dimensional scene on the computer and has the capability of interaction. This is widely used in gaming.
- VRML – Virtual Reality Markup Language allows the display of 3D images.

Basic of Internet

- The Internet is a worldwide telecommunications system that provides connectivity for millions of other, smaller networks; therefore, the Internet is often referred to as a network of networks.
- It allows computer users to communicate with each other across distance and computer platforms (Including other ICT Based Devices such as Mobile & Other electronic devices)
- The Internet began in 1969 as the U.S. Department of Defense's Advanced Research Project Agency (ARPA) for war communication
- The World Wide Web—usually called the Web for short—is a collection of different websites you can access through the Internet.
- Internet Service Provider- an ISP offers a variety of services for a variety of prices: web page access, email, web page hosting and so on. Most ISPs offer various internet connection speeds for a monthly fee
- A browser is a program that allows you to interact and view the internet and contents of the Web.
- The Web Browser, Internet Explorer, or IE is developed by Microsoft and comes pre-installed when you buy a Windows computer.
- A browser is a free software package or mobile app that lets you view web pages, graphics, and most online content. The most popular web browsers include Chrome, Firefox, Internet Explorer, and Safari, but there are many others.

➢ Top-level domain names include:

.com	-	Commercial
.edu	-	Educational
.gov	-	US Government
.int	-	Organization

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.mil	-	US Military
.net	-	Networking Providers
.org	-	Non-profit Organization

- Domain name country codes include, but are not limited to:

.au	-	Australia
.de	-	Germany
.fr	-	France
.in	-	India
.uk	-	United Kingdom
.us	-	United States

- SSL- The acronym SSL stands for Secure Sockets Layer. SSL is a secure encryption Web protocol used to make data safe when transmitted over the Internet.
- Web Hosting- A web host is a business/company that offers space, storage, and connectivity in order to enable a website to be viewed by Internet users.
- Web Server- the Term Web server refers to a specialized computer system or dedicated server specifically designed to host or deliver Web sites.
- Hypertext Markup Language is the programming language of WebPages. HTML commands your web browser to display text and graphics in a specific fashion. Beginning internet users don't need to know HTML coding to enjoy the WebPages the programming language delivers to browsers.
- XML is extensible Markup Language, a cousin to HTML. XML focuses on cataloging and databasing the text content of a web page.
- XHTML is a combination of HTML and XML.
- HTTP- The client/server protocol used to exchange hypertext documents is called HTTP (Hyper Text Transport Protocol). The main thing you need to know is that HTTP is a language spoken between your web browser (client software) and a web server (server software) so that they can communicate with each other and exchange files

Basic of e-Mail

- Electronic mail is a method of exchanging messages between people using electronic devices.
- Invented by Ray Tomlinson, email first entered limited use in the 1960s and by the mid-1970s had taken the form now recognized as email.
- Email, short for Electronic Mail, consists of messages which are sent and received using the Internet. There are many different email services available that allow you to create an email account and send and receive email and attachments, many of which are free.
- Today, the top three webmail providers are Yahoo!, Microsoft's Outlook.com (previously Hotmail), and Google's Gmail.

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- Many people also have an email address hosted by their company, school, or organization. These email addresses are usually for professional purposes.

➢ The first five lines of an E-mail message is called E-mail header. The header part comprises of following fields:

❖ From
❖ Date
❖ To
❖ Subject
❖ CC
❖ BCC

Email Protocols: IMAP, POP3, SMTP and HTTP

E-mail Protocols are set of rules that help the client to properly transmit the information to or from the mail server.

❖ POP3 (Post Office Protocol 3) - This is a simple, standardized protocol that allows users to access their mailboxes on the Internet and download messages to their computers. The simple design of POP3 allows casual email users who have a temporary Internet connection (dial-up access) to access emails. They can read their emails, draft new emails or reply to emails while they are offline, and can send these emails when they are back online.

❖ IMAP (Internet Message Access Protocol) – This is a standard protocol used for email transfer by users. Like POP3, it also supports both online and offline modes of email access. The email message is downloaded to the user's machine only when a specific request is made to read it. Users can download mails to their computers while keeping a copy on the server. The mails on the server are the primary copy and anything changed on the local machine is updated by what is on the serve

❖ SMTP (Simple Mail Transfer Protocol) – As the name suggests, SMTP is a simple, text-based protocol that works best when devices are interconnected to each other. However, SMTP protocol can only be used to send emails. Unlike POP3 and IMAP protocols, SMTP does not provide the functionality to the users to retrieve emails from the server. This limits the use of SMTP to some extent. One of the main issues with SMTP is the lack of sender email authentication. SMTP lacks security features too and thus users get spam emails.

Basic of Audio and Video-conferencing

- When a number of participants of a meeting use telephonic instruments to communicate with each other then it is known as audio conferencing

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- When two or more people use digital platforms communicate and collaborate with each other to achieve a common goal effectively then it is known as a video conferencing mode of communication or a tool of face-to-face conferencing.
- There are many online tools, incorporating a range of options from free one-to-one audio conferencing all the way to more sophisticated and expensive tools such as Polycom which allow multiple sites with entire classes participating using video and audio.
- Most Popular Video Conferencing Software
  - Skype
  - Zoom
  - Cisco WebEx.
  - GoToMeeting
  - Zoho Cliq.
  - Workplace by Facebook.

Digital Initiative in Higher Education

National Digital Library (NDL)

Ministry of Human Resource Development (MHRD) under its National Mission on Education through Information and Communication Technology (NMEICT) has initiated the National Digital Library of India (NDL India) pilot project to develop a framework of virtual repository of learning resources with a single window search facility. The Project titled "Development of National Digital Library of India, Towards Building a National Asset" has been sanctioned to IIT, Kharagpur under NMEICT by MHRD.

National Academic Depository:-

National Academic Depository (NAD) is an initiative of Ministry of Human Resources Development, Govt. of India (MHRD) to facilitate digital issuance, storage, access and verification of Academic Awards issued by Academic Institutions.
NAD is a Unique, Innovative and Progressive initiative under "Digital India" theme towards achieving Digital enablement of the Education Records. NAD aspires to make the vision of Digital Academic Certificates for every Indian a reality.

e-Shodh Sindhu

Based on the recommendation of an Expert Committee, the MHRD has formed e-ShodhSindhu merging three consortia initiatives, namely UGC-INFONET Digital Library Consortium, NLIST and INDEST-AICTE Consortium. More than 15,000 international electronic journals and e-books are made available to all the higher educational institutions through the e shodh Sindhu initiative. This allows access to be best education resources in the world using digital mode

Virtual Labs

Physical distances and the lack of resources make us unable to perform experiments, especially when they involve sophisticated instruments. Also, good teachers are always a scarce resource.

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Web-based and video-based courses address the issue of teaching to some extent. Conducting joint experiments by two participating institutions and also sharing costly resources has always been a challenge.

e-Yantra

An MHRD initiative under NMEICT Programme, named “e-Yantra” is implemented to incorporate Robotics into engineering education with the objective of engaging students through exciting hands-on application of mathematics, computer science, and engineering principles. Creation of robotic platforms has been very successfully demonstrated during Phase-I of the project. Presently, e-Yantra has been implemented in 100 colleges.

Campus Connectivity

The National Mission on Education through Information and Communication Technology (NMEICT) aims to leverage the potential of Information and Communication Technology (ICT) in teaching and learning process. The Mission also aims to provide 20 Broadband connections of 512 Kbps speed to over 25,000 colleges and 2000 polytechnics and optical ber connectivity one Gbps to 419 universities/ university level institutions in the country which includes internet facility.

Talk to a Teacher

Talk to a Teacher developed by IIT Bombay, is an initiative of the National Mission on Education through ICT, funded by MHRD to provide free access to a few selected graduate and postgraduate courses, taught at IIT Bombay by distinguished faculty members and scholars at large.

Ask A Question

Ask A Question is a unique platform through which students from science and engineering colleges all over India can ask questions and faculty from IIT Bombay answers them. Students can ask questions either through an online forum or during an interactive live session.

e-Acharya

e-Acharya also called ‘Integrated e-Content Portal’ of NMEICT, is the o_cial repository of NMEICT econtent and all content produced under NMEICT is being put at this Repository platform at INFILIBNET Centre Gandhinagar, so to apply basic tenets of preservation for digital content, implement standard Metadata schema of different types for the digital content and ensure their long-term availability.

E-Kalpa

Another MHRD/ NMEICT initiative named “e-Kalpa” creating Digital-Learning Environment for Design in India has successfully demonstrated the achievement of the following project objectives, on completion of its phase-I:

1. Digital online content for learning Design with e-Learning programs on Design
2. Digital Design Resource Database including the craft sector

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3. Social networking for Higher Learning with collaborative Learning Space for Design
4. Design inputs for products of National Mission in Education through ICT

The Free and Open Source Software for Education (FOSSEE)

FOSSEE project sanctioned to IIT Bombay has been promoting use of open source software in educational institutions (http://fossee.in). It does through instructional material, such as spoken tutorials, documentation, such as textbook companions, awareness programmes, such as conferences, training workshops, and Internships. Textbook Companion (TBC) is a collection of code for solved examples of standard textbooks.

e-Vidwan

The 'Information and Library Network' (INFLIBNET) Centre took the initiative called "Vidwan: Expert Database and National Researcher's Network" with the financial support from NMEICT.

Objectives:-

collect academic and research profiles of scientists, faculty and research scientists working in leading academic and R&D organizations in India and abroad;

quickly and conveniently provide information about experts to peers, prospective collaborators, funding agencies, policy makers and research scholars in the country;

establish communication directly with the experts who possess the expertise needed by research scholars;

identify peer reviewers for review of articles and research proposals; and

create information exchanges and networking opportunities among scientist.

Central cloud Infrastructure

Central cloud Infrastructure: The MHRD under NMEICT has awarded a project to IIT Delhi, to set up a robust 24X7 backed Data Centre and the activities have been put up at NIC / NKN Data Centre, and the cloud is called 'Baadal'. The IIT Delhi cloud is hosting e-content and video content of e-Acharya.

NIRF

launched on 29th September 2015 by MHRD, this framework intents to outlines a methodology for ranking the institutions across our country. The Core Committee set up by MHRD arrived at the broad level understanding and hence give overall recommendations. Then only the methodology has been driven.

GIAN

Aimed to tap the talent of the strong academic network of the country-scientists, entrepreneurs, at international level. To encourage their overall engagement with Higher Education Institutes in India

UAY

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The major objectives of the UAY scheme are to promote innovation & development in IITs addressing the issues of the manufacturing industries; to spur the innovative mindset; to coordinate the action between the academia & industry and to strengthen the labs & the research facilities.

IMPRINT

IMPRINT-Impacting Research Innovation & Technology. First of this kind Pan-IIT + IISc joint initiative supported by MHRD to address the major challenges in science and engineering. These challenges are must to fix and India must champion in that to enable and empower the country for self-reliance and inclusive growth.

Technical Education Quality Improvement Programme of Government of India (TEQIP)

Launched by MHRD in December 2002. It was aimed to support and upscale ongoing efforts in improving the quality of technical education in India and enhancing the existing capacities of the technical institutions to become more dynamic, quality conscious, demand-driven, forward-looking, effective and responsive.

RUSA

Rashtriya Uchchtar Shiksha Abhiyan. It is the Centrally Sponsored Scheme planned by the Central Government has to implement the strategic funding, reforms, and improvements in the Higher Education sector at the state level.

ICT and Governance

The term e-governance focuses on the use of new ICT by governments as applied to the full range of government functions. Thus e-governance is the application of information and communication technology for delivering government services, exchange of information, communication, transaction, integration, various stands alone systems and services between government and citizens, government and business as well as back office process and interaction within the entire government frame work.

ICT acts in speeding up the flow of information and knowledge between government and citizen and transforming the way in which government and citizen interact.

Types of Government Interaction in e-governance.

G2G: Government to Government-

- e-office project of central government for file movement across the departments

G2C: Government to Citizen

- CSC(Scheme to deliver various services to Citizen of India)
- Bharat Bill Pay(One Stop Bill payment System)
- Passport Seva Kendra
- PAN(NSDL & UTI Services)
- E-District (Various certificates/ licences, social welfare scheme, RTI, Land registration, etc)

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- EPIC(Election Commission services)
- IRCTC
- e-Panchayat
- e-Court Mission Mode Project (MMP)
- NTA- National Testing Agency
- National Agriculture Market (eNAM)

G2B: Government to Business

- MCA- All Business relates needs & requirements for Company
- e-tender
- GST
- e-Biz Mission Mode Project
- E-Gem(Government e Marketplace)
- Government Online Procurement Portal

G2E: Government to Employee

- Pradhan Mantri Rojgar Protsahan Yojana
- The EPF-EPS model- EPFO & provident funds

National e-Government Plan(NeGP)

National e-Governance Plan(NeGP) – make all government services accessible to common man in his locality, through common service delivery outlets and ensure efficiency, transparency & reliability of such services at affordable cost to realize the basic needs of the common man.

Digital India

The Digital India programme is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy.

- The focus is on being transformative – to realize IT + IT = IT
- The focus is on making technology central to enable change.
- It is an Umbrella Programme – covering many departments.

MCQ

1. Select the true statement about an operating system (OS)?
(1) An OS controls peripheral, allocates memory and organizes data into fields and records.
(2) An OS provides protection against viruses and controls peripherals.
(3) An OS controls peripheral, and allocates memory and processor time.
(4) An OS controls the processor and peripherals and allows the user to connect to the internet
Answer: 3.

2. Which of the following is a type of malware intentionally inserted into a software system that will set off a malicious function when specified conditions are met?

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(1) Worm
(2) Trojan
(3) Spyware
(4) Logic bomb
Answer: 4

3. Which of the following statements(s) is/are true in respect of wireless technology?
P: Bluetooth is a wireless technology which can be used to connect a headset to a mobile phone.
Q: Bluetooth is a long-range wireless technology and is a low cost means of data transfer.
(1) P only
(2) Q only
(3) Both P and Q
(4) Neither P nor Q
Answer: 1

4 Which of the following file format is not a video file format?
(1) .AVI
(2) .MOV
(3) .MP4
(4) JPEG
Answer: 4

5. SMTP is an acronym for:
(1) Simple Mail Transport Protocol
(2) Simple Mail Terminal Protocol
(3) Simple Mail Transfer Protocol
(4) Simple Mail Transition Protocol
Answer: 3

6. A computer has a main memory of 960 Kbytes. What is the exact number of bytes contained in this memory?
(1) 960 × 8
(2) 960 × 1000
(3) 960 × 1024
(4) 960 × 1024 × 1024
Answer: 2

7. The convenient place to store contact information for quick retrieval in e-mail is:
(1) Address box
(2) Message box
(3) Address book
(4) Message book
Answer : 3

8. Why would BCC: be used in an e-mail?
(1) BCC: allows the recipient to identify all the other recipients in the list when a group email address is used.

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(2) BCC: allows the sender to indicate who the email is for if there is more than one recipient.
(3) BCC: allows the sender of a message to conceal the recipient entered in the BCC: field from the other recipients.
(4) BCC: allows recipients to be visible to all other recipients of the message.
Answer: 3

9. Jatin's laptop has an LCD screen. The acronym LCD stands for:
(1) Light Crystal Display
(2) Liquid Compact Display
(3) Light Compact Display
(4) Liquid Crystal Display
Answer: 4

10. Which of the following is an example of proprietary system software?
(1) Linux
(2) Microsoft Internet explorer
(3) Microsoft office
(4) Microsoft windows
Answer: 4

11. With respect to computers, which one of the following best describes phishing?
(1) A malicious program installed on a system that stays concealed to avoid detection.
(2) A method of bypassing normal authentication procedures over a connection to a network.
(3) A type of unsolicited bulk email of identical messages sent to numerous recipients.
(4) An attempt to acquire sensitive information for malicious reasons, by masquerading as a trustworthy entity.
Answer : 4

12. A computer network which is used within a building is called a:
(1) WAN (2) MAN
(3) LAN (4) SAN
Answer: 3

13. A/An _____ is a computer program that spreads by inserting copies of itself into other executable code or documents.
(1) Operating system
(2) Computer Virus
(3) Firewall
(4) Anti-virus
Answer:2

14. Which of the following is not a/an web browser?
(1) Internet Explorer
(2) Mozilla Firefox
(3) Google Chrome
(4) Yahoo

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Answer: 4

15. One Terabyte (TB) of memory is equal to:
(1) 1024 KB
(2) 1024 × 1024 KB
(3) 1024 × 1024 × 1024 KB
(4) 1024 × 1024 × 1024 Bytes
Answer :3

16. Which one of the following processes is the main task for the computer in mapping the geographical data?
1. Data storage
2. Data visualization
3. Data retrieving and drawing
4. Data Collection
Answer: 3.

17. In computer terminology which of following describe device drivers
1. Hardware that allows interaction between peripheral device and the operating system.
2. Software that allow the user to control the operating system
3. Software that allows interaction between peripheral device and the operating system.
4. Software that allow the user to control the operating system
Answer: 3

18. Which of the following is not true about RAM?
1. RAM is a temporary storage area
2. RAM is the same as hard disk storage
3. RAM is volatile
4. Information stored in RAM is gone when you turn the computer off
Answer: 2

19. Most World Wide Web pages contain commands in the language _____
1. NIH
2. URL
3. HTML
4. IRC
Answer: 3

20. Which one of the following would not be considered as a form of secondary storage?
1. Floppy Disk
2. Optical Disk
3. RAM
4. Flash Drive
Answer: 3

21. What does the acronym WAN stand for?
1. Widest Area Network
2. Wild Area Network

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3. Wide Area Networking
4. Wide Area Network
Answer: 4

22. FTP is an acronym for–
1. File Transaction Protocol
2. File Truncation Protocol
3. File Translation Protocol
4. File Transfer Protocol
Answer: 4

23. Bluetooth is a type of radio wave information transmission system that is good for about _____
1) 30 feet
2) 30 yards
3) 30 miles
4) 300 miles
Answer: 1

24. Which of the following statements, regarding the term ICT is/are TRUE ?
P : ICT is an acronym that stands for Indian Classical Technology.
Q : Converging technologies that exemplify ICT include the merging of audio-visual, telephone and computer networks through a common cabling system.
(1) P only
(2) Q only
(3) P and Q
(4) Neither P nor Q
Answer: (2)

25. A new Laptop has been produced that weighs less, is smaller and uses less power than previous Laptop models. Which of the following technologies has been used to accomplish this ?
(1) Universal Serial Bus Mouse
(2) Faster Random Access Memory
(3) Blu Ray Drive
(4) Solid State Hard Drive
Answer: (4)

26. Given the following email _elds, which of the email addresses will 'swami' be able to see when he receives the message ?
To… ram@test.com
Cc… raj@test.com; ravi@test.com
Bcc… swami@test.com; rama@test.com
(1) ram@test.com
(2) ram@test.com; raj@test.com; ravi@test.com
(3) ram@test.com; rama@test.com
(4) ram@test.com; rama@test.com; raj@test.com; ravi@test.com
Answer: (2)

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27. Put the following units of storage into the correct order, starting with the smallest unit first and going down to the largest unit :
(a) Kilobyte (b) Byte (c) Megabyte
(d) Terabyte (e) Gigabyte (f) Bit
Give your answer from the following code :
(1) (f), (b), (a), (c), (d), (e)
(2) (f), (b), (a), (d), (e), (c)
(3) (f), (b), (a), (c), (e), (d)
(4) (f), (b), (a), (d), (c), (e)
Correct answer is (3) i.e. bit<Byte<KB<MB<GB<TB

28. With regard to computer memory, which of the following statement(s) is/are TRUE ?
P : Read Only Memory (ROM) is 'volatile' memory.
Q : Random Access Memory (RAM) is 'volatile' memory.
R : Secondary Memory is 'volatile' memory.
(1) P only
(2) Q only
(3) P and Q only
(4) P and R only
Correct answer should be (2)

29. Which of the following domains is used for – pro_t businesses?
(1) .net
(2) .edu
(3) .com
(4) .org
Answer: (3)

30. The data storage hierarchy consists of:
(1) Bits, bytes, fields, records, files and databases
(2) Bits, bytes, records, fields, files and databases
(3) Bits, bytes, fields, files, records and databases
(4) Bytes, bits, fields, records, files and databases
Answer: (1)

31. What is the full form of USB as used in computer-related activities?
(1) Universal Security Block
(2) Universal Serial Bus
(3) United Serial Bus
(4) Ultra Security Block
Answer: (2)

32. What is the name of a web page address?
(1) Directory
(2) Protocol
(3) URL
(4) Domain

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Answer: (3)

33. Which of the following represents billion characters?
(1) Megabytes
(2) Kilobytes
(3) Gigabytes
Answer: (3)

34. Read the following two statements :
I : Information and Communication Technology (ICT) is considered a subset of Information Technology (IT).
II : The 'right to use' a piece of software is termed as copyright. Which of the above statement(s) is/are CORRECT ?
(1) Both I and II
(2) Neither I nor II
(3) II only
(4) I only
Answer: (2)

35. Which of the following correctly lists computer memory types from highest to lowest speed ?
(1) Secondary Storage; Main Memory (RAM); Cache Memory; CPU Registers
(2) CPU Registers; Cache Memory; Secondary Storage; Main Memory (RAM)
(3) CPU Registers; Cache Memory; Main Memory (RAM); Secondary Storage
(4) Cache Memory; CPU Registers; Main Memory (RAM); Secondary Storage
Answer: (2)

36. Which of the following statement(s) is/are TRUE ?
S1 : The decimal number 11 is larger than the hexadecimal number 11.
S2 : In the binary number 1110.101, the fractional part has the decimal value as 0.625.
(1) S1 only
(2) S2 only
(3) Both S1 and S2
(4) Neither S1 nor S2
Answer: (2)

37. With regard to a word processing software, the process of combining static information in a publication together with variable information in a data source to create one merged publication is called
(1) Electronic mail
(2) Data sourcing
(3) Mail merge
(4) Spam mail
Answer: (3)

38. DVD technology uses an optical media to store the digital data. DVD is an acronym for
(1) Digital Vector Disc
(2) Digital Volume Disc

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(3) Digital Versatile Disc
(4) Digital Visualization Disc
Answer: (3)

39. The statement “the study, design, development, implementation, support or management of computer based information systems, particularly software applications and computer Hardware” refers to
(1) Information Technology (IT)
(2) Information and Collaborative Technology (ICT)
(3) Information and Data Technology (IDT)
(4) Artificial Intelligence (AI)
Answer: (1)

40. If the binary equivalent of the decimal number 48 is 110000, then the binary equivalent of the decimal number 51 is given by
(1) 110011 (2) 110010 (3) 110001 (4) 110100
Answer: (1)

41. The process of copying _les to a CD-ROM is known as
(1) Burning (2) Zipping (3) Digitizing (4) Ripping
Answer: (1)

42. An unsolicited e-mail message sent to many recipients at once is a
(1) Worm (2) Virus (3) Threat (4) Spam
Answer: (4)

43. _____ is a type of memory circuitry that holds the computer’s start-up routine.
(1) RIM (Read Initial Memory)
(2) RAM (Random Access Memory)
(3) ROM (Read Only Memory)
(4) Cache Memory
Answer: (3)

44. An ASCII is a character-encoding scheme that is employed by personal computers in order to represent various characters, numbers and control keys mat the computer user selects on the keyboard. ASCII is an acronym for
(1) American Standard Code for Information Interchange
(2) American Standard Code for Intelligent Information
(3) American Standard Code for Information Integrity
(4) American Standard Code for Isolated Information
Answer: (1)

45. NMEICT stands for :
(1) National Mission on Education through ICT
(2) National Mission on E-govemance through ICT
(3) National Mission on E-commerce through ICT
(4) National Mission on E-learning through ICT
Answer: (1)

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46. Which of the following is an instant messaging application ?
(a) WhatsApp
(b) Google Talk
(c) Viber
Select the correct answer from the codes given below :
(1) (a) and (b) only (2) (b) and (c) only
(3) (a) only
(4) (a), (b) and (c)
Answer: (4)

47. In a Computer a byte generally consists of :
(1) 4 bits (2) 8 bits (3) 16 bits (4) 10 bits
Answer: (2)

48. Which of the following is not an input device ?
(1) Microphone (2) Keyboard (3) Joystick (4) Monitor
Answer: (4)

49. Which of the following is an open source software ?
(1) MS Word (2) Windows (3) Mozilla Firefox (4) Acrobat Reader
Answer: (3)
50. Which of the following enables us to send the same letter to different persons in MS Word
(1) Mail join (2) Mail copy
(3) Mail insert (4) Mail merge
Answer: (4)

51. Encoding or scrambling data for transmission across a network is known as :
(1) Protection (2) Detection (3) Encryption (4) Decryption
Answer: (3)

52. Which of the following is not an output device ?
(1) Printer (2) Speaker (3) Monitor (4) Keyboard
Answer: (4)

53. Which of the following represents one billion characters ?
(1) Kilobyte (2) Megabyte (3) Gigabyte (4) Terabyte
Answer: (3)

54. Which of the following is not open source software ?
(1) Internet explorer (2) Fedora Linux (3) Open office (4) Apache HTTP server
Answer: (3)

55. Which one of the following represents the binary equivalent of the decimal number 25 ?
(1) 10101 (2) 01101 (3) 11001 (4) 11011
Answer: (3)

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56. Which is an instant messenger that is used for chatting ?
(1) Altavista (2) MAC (3) Microsoft Office (4) Google Talk
Answer: (4)

57. CSS stands for
(A) Cascading Style Sheets
(B) Collecting Style Sheets
(C) Comparative Style Sheets
(D) Comprehensive Style Sheets
Answer: (A)

58. MOOC stands for
(A) Media Online Open Course
(B) Massachusetts Open Online Course
(C) Massive Open Online Course
(D) Myrind Open Online Course
Answer: (C)

59. Binary equivalent of decimal number 35 is
(A) 100011 (B) 110001
(C) 110101 (D) 101011
Answer: (A)

60. gif. jpg, bmp, png are used as extensions for _les which store
(A) audio data (B) image data (C) video data (D) text data
Answer: (B)

61. Symbols A-F are used in which one of the following ?
(A) Binary number system
(B) Decimal number system
(C) Hexadecimal number system
(D) Octal number system
Answer: (C)

62. Which one of the following is not a search engine ?
(A) Google (B) Chrome
(C) Yahoo (D) Bing
Answer: (B)

63. When a computer is booting, BIOS is loaded to the memory by
(A) RAM (B) ROM
(C) CD-ROM (D) TCP
Answer: (B)

64. Which one of the following is not. the same as the other three ?
(A) MAC address
(B) Hardware address
(C) Physical address

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(D) IP address
Answer: (D)

65. Identify the IP address from the following:
(A) 300-215 -317-3
(B) 302-215@ 417 -5
(C) 202 . 50 . 20 . 148
(D) 202-50-20-148
Answer: (C)

66. The acronym FTP stands for
(A) File Transfer Protocol
(B) Fast Transfer Protocol
(C) File Tracking Protocol
(D) File Transfer Procedure
Answer: (A)

67. Which one of the following is not a/an image/graphic file format ?
(A) PNG (B) GIF
(C) BMP (D)GUI
Answer: (D)

68. The first web browser is
(A) Internet Explorer
(B) Netscape
(C) World Wide Web
(D) Firefox
Answer: (C)

69. Which of the following is a social network ?
(A) amazon.com
(B) eBay
(C) gmail.com
(D) Twitter
Answer: (D)

70. Internal communication within institutions is done through
(A) LAN
(B) WAN
(C) EBB
(D) MMS
Answer: (A)

71.' 'www' stands for
(A) work with web
(B) word wide web
(C) world wide web
(D) worth while web

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Answer: (C)

72. A hard disk is divided into tracks which is further subdivided into
(A) Clusters (B) Sectors (C) Vectors (D) Head
Answer: (B)

73. A computer program that translates a program statement by statement into machine language is called a / an
(A) Compiler (B) Simulator (C) Translator (D) Interpreter
Answer: (D)

74. A Gigabyte is equal to
(A) 1024 Megabytes
(B) 1024 Kilobytes
(C) 1024 Terabytes
(D) 1024 Bytes
Answer: (A)

75. A Compiler is software which converts
(A). Characters to bits.
(B) High level language to machine language.
(C) Machine language to high level language
(D) Words to bits
Answer: (B)

76. Virtual memory
(A) an extremely large main memory.
(B) an extremely large secondary memory.
(C) an illusion of extremely large main memory
(D) a type of memory used in super computers.
Answer: (C)

77. ALU stands for
(A) American Logic Unit
(B) Alternate Local Unit
(C) Alternating Logic Unit
(D) Arithmetic Logic Unit
Answer: (D)

78. A Personal Computer uses a number of chips mounted on a circuit board called
(A) Microprocessor
(B) System Board
(C) Daughter Board
(D) Mother Board
Answer: (D)

79. Computer Virus is a
(A) Hardware (B) Bacteria (C) Software (D) None of these

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Answer: (C)

80. _____ is a protocol used by e-mail clients to download e-mails to your computer.
(A) TCP (B) FTP
(C) SMTP (D) POP
Answer: (D)

81. TCP/IP is necessary if one is to connect to the
(A) Phone lines
(B) LAN
(C) Internet
(D) a Server
Answer: (C)

82. Each character on the keyboard of computer has an ASCII value which stands for
(A) American Stock Code for Information Interchange
(B) American Standard Code for Information Interchange
(C) African Standard Code for Information Interchange
(D) Adaptable Standard Code for Information Change
Answer: (B)

83. Which of the following is not a programming language ?
(A) Pascal
(B) Microsoft O_ce
(C) Java
(D) C++
Answer: (B)

84. Minimum number of bits required to store any 3 digit decimal number is equal to
(A) 3
(B) 5
(C) 8
(D) 10
Answer: (D)

85. Internet explorer is a type of
(A) Operating System
(B) Compiler
(C) Browser
(D) IP address
Answer: (C)1

86. POP3 and IMAP are e-mail accounts in which
(A) One automatically gets one's mail everyday
(B) One has to be connected to the server to read or write one's mail
(C) One only has to be connected to the server to send and receive email
(D) One does not need any telephone lines
Answer: (C)

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87. Which of the following operating system is used on mobile phones ?
(A) Windows Vista
(B) Android
(C) Windows XP
(D) All of the above
Answer: (B)

88. If (y)x represents a number y in base x, then which of the following numbers is smallest of all ?
(A) (1111)2 (B) (1111)8 (C) (1111)10 (D) (1111)16
Answer: (A)

89. High level programming language can be converted to machine language using which of the following ?
(A) Oracle (B) Compiler (C) Mat lab (D) Assembler
Answer: (B)

90. HTML is used to create
(A) machine language program
(B) high level program
(C) web page
(D) web server
Answer: (C)

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PEOPLE, DEVELOPMENT AND ENVIRONMENT

In India, Prime Minister Sh. Narendra Modi with his High-Level Steering Committee periodically reviews and refines the National Indicator Framework (NIF) to monitor the Sustainable Development Goals (SDGs).

The targets of the team are:

- To check the on-going national policies, programmes and plans and work upon the developmental challenges.
- To monitor the Sustainable Development Goals (SDGs) at the national and state levels and how they scientifically measure the outcomes of the policies.
- The committee also reviews the National Indicator Framework for its enhancement.
- For effective monitoring, sophisticated IT tools are used.

SDGs with 17 Goals and 169 Targets intend for the promotion of sustainable, inclusive and equitable economic growth, creating greater opportunities for all, reducing inequalities, raising basic standards of living, fostering equitable social development and inclusion, promoting integrated and sustainable management of natural resources and ecosystems.

SDG India Index scores within each Goal, leading States/UT's can be identified under each goal-

1. No poverty – Tamil Nadu and Pondicherry
2. Zero hunger – Goa and Delhi
3. Good health and well being – Kerala and Pondicherry
4. Quality education – Kerala
5. Gender equality – Kerala, Sikkim and Andaman & Nicobar Islands
6. Clean water and sanitation – Gujarat, Chandigarh, Dadra & Nagar Haveli and Lakshadweep
7. Affordable and clean energy – Tamil Nadu and Chandigarh
8. Decent work and economic growth – Goa and Daman & Diu
9. Industry innovation and infrastructure – Manipur, Delhi and Pondicherry
10. Reduced inequality – Meghalaya, Mizoram, Telangana, Dadra & Nagar Haveli, Daman & Diu and Lakshadweep

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11. Sustainable cities and communities – Goa and Andaman & Nicobar Islands
12. Life on land – Assam, Chhattisgarh, Goa, Manipur, Odisha, Uttarakhand, Dadra & Nagar Haveli and Lakshadweep
13. Peace, justice and strong institutions – Himachal Pradesh and Pondicherry

- **The National Indicator Framework (NIF) helps to monitor and report on the progress of SDGs on the national level.**
- **To achieve the deadline of 2030, the United Nations has introduced many initiatives so that it could be more effective, organized and accountable.**
- **Human and Environment Interaction: Anthropogenic activities and their impacts on the Environment**

Renewable and non-renewable resources

Resources can be classified as renewable and non-renewable resources. Renewable resources can be replenished by natural means like solar energy is powered by heat from the sun and never runs out. Oxygen, water, solar energy and biomass are some examples of renewable resources.

Whereas, non-renewable resources cannot be replenished by natural means and quickly as the rate they are consumed like minerals and fossils fuels such as oil, coal and gas which are produced over several of years by natural processes from decayed plants and animals.

Energy resources

Renewable and non-renewable resources play a major role in energy resources. For global Industrialization, fossil fuels are the main energy source, but as they are non-renewable the quantity is limited and is not sustainable for longer period. Another main cause of climatic change is due to the burning of fossil fuels. The wood we know is a renewable source, when we cut the trees, it will re-grow but this also causes deforestation.

Water resources

The direct use of water can be categorized into three main categories –

- Domestic use
- Agricultural use
- Industrial use

Environmental Issues

Environmental issues like

- global warming
- air pollution
- water pollution
- noise pollution
- space pollution
- heat pollution

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- acid rain
- waste disposal
- ozone layer depletion
- use of fossil energy
- greenhouse gas releases
- climatic changes, etc

The environment consists of three components.

A biotic or non-living component, which is subdivided into the three categories like,

- Lithosphere (Rocks, soil and solid air)
- The hydrosphere (water component)
- Atmosphere (gaseous envelope) which is again divided into four zones, namely:-
- Troposphere
- Stratosphere
- Ionosphere, and
- Exosphere.

Thus the three basic divisions of the physical environment may be termed as

- Lithospheric Environment
- Hydrospheric Environment
- Atmospheric Environment.

The biotic or living component consists of flora and fauna including man as an important factor. Thus the biotic environment may be divided into
i) Plants Environment and
ii) Animals Environment.

Environmental pollution

There are several kinds of pollution, they are as follows:

- **Air Pollution** – Air pollution is mainly caused due to the release of toxic gases or smokes from the industries or small factories.
- **Water Pollution** – As natural water resources is diminishing day by day, water has become a scarcity. The major issues due to which water pollution are cause are the lakes and rivers are filled with the sewage, garbage or liquid wastes from the households, agricultural lands and factories. They contain harmful chemicals which makes the water poisonous for the aquatic plants and animals.
- **Waste disposal/garbage pollution** – When there are no proper waste disposal mechanisms, the garbage gets accumulated which cause garbage pollution. There should be a proper waste disposal system so that it does not pollute our environment.
- **Noise Pollution** – Noise pollution is caused when there are excessive noises which are disturbing others, creating physical and mental health like sleep disturbance, hearing loss, hypertension, etc. They are mainly due to noise from the machines, transportation systems, aircraft, trains, etc.

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The major factors of pollution are:

- **Population growth** – population growth has become a global problem. Population growth is the major cause of the degradation of the environment. With the increase in population, people require land for buildings, more minerals, more water and more energy. The effects include uses of chemical fertilizers, insecticides, deforestation, increased population and heavy transportation, etc.
- **Urbanization** – with the increase in population, people moving from villages to towns and cities causing chaos as they face various problems like lack of water, sanitation, houses at an affordable price, roads, public transport, traffic problems, congestions, fresh air, as well as an unsafe social environment.
- **Agricultural development** – agricultural practices causes ecological and social harm in developing countries. They pollute the environment in various ways like:
  -Through chemical fertilizers, pesticides and insecticides
  -Through unreasonable facilities and other irrigation processes.
  -By making changes in biological communities.
- **Industrialization** – industrial revolution had brought drastic changes in manufacturing, agriculture, animal husbandry and transportation among various other things. Without proper treatment, these industries discharge wastewater into rivers causing water pollution. Misuse of natural resources to meet the industrial demands has resulted in,
  -reduction of forests due to the cutting of trees.
  -digging of land for mining purposes.
  -lowering of groundwater level due to excessive extraction of groundwater.
- **Deforestation** – forests play a vital role in India for its economy, social and cultural. Deforestation gives problems to various issues like soil erosion, increase of residue in the rivers, increase of floods and droughts. Growth of greenhouse effects which destructs the atmospheric storms, etc., damage to agricultural crops due to floods and droughts results in loss of economy. It also results in a decrease in agricultural production, the supply of raw materials to the industries and building matters, etc.
- **Electronic waste (E-waste)** – electronics, telecommunications, and computerizations are inseparable in this fast developing economy like India. But, these electronic devices contain toxic substances and their disposal and recycling become a health issue. E-waste is growing very fast as people changing their devices more frequently than ever before. Each year they are just dumped or burnt. Though global initiatives have been started in 2006 to phase out chemicals from electronic devices with the launch of the Restriction of Hazardous Substances Directive (RoHS) in Europe.
- **Thermal power plants** – power plants mainly use coal for generating electricity. Energy in the form of electricity is a basic requirement for any developmental activities and can be generated by various methods, materials and mechanisms. The wear and tear of plant and machinery, low thermal efficiency, choking and scaling of furnaces results to a large amount of fly ash. Due to little land space, thermal plants cannot afford an ash pond and they let the waste run into the nearby river or stream, choking the drainage

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system. Coal-based thermal plants pollute the atmosphere by emitting gaseous substance like sulphur dioxide (SO2), Nitrogen oxide etc., causing acid rain, damage of soil, vegetation and aquatic life of that region.

It is preferred that power plants should be placed more on wastelands but with the course of time, we can find that some of the cultivable areas are covered for ash mount site. The presence of fly ash is very harmful to the lungs as it affects the tissues of the respiratory tract when inhaled.

- **Modern productive technology** – though modern technologies and techniques have enabled the man to increase his comfort level. But, these also have created several environmental problems affecting our forests, rivers, streams, etc. The most dangerous is the production of toxic chemicals, synthetic materials. Disposal of plastics is also a main issue for any developing or advanced countries. Another major which is affecting our environment is the disposal of nuclear wastes coming out of nuclear reactor plants.

Impacts of Pollutants on Human Health

Health impacts of some specific air pollutants

- **Tobacco smoke** – it generates harmful chemicals and causes cancer to the smoker. It also affects the passive smoker like burning sensation in the eyes or nose, throat irritation, etc.
- **Volatile organic compounds** – they can cause irritation of the eyes, throat, nose, headaches and nausea. They even can damage the liver and other parts of the body.
- **Lead** – the exposure damages the nervous system, digestive problems, cancer. It is also dangerous to small children.
- ***Ozone*** – the exposure to this gas causes itching on the eyes, burning and watery. It also increases respiratory disorders like asthma. It also lowers the resistance to colds and pneumonia.
- **Nitrogen oxide** – this gas makes the children disposed to respiratory diseases in winters.
- ***Carbon monoxide*** – carbon monoxide combines with hemoglobin and lessens the required oxygen that enters our blood through lungs. This causes changes in the function of the affected organs like the brain and cardiovascular system. It also affects the concentration level, makes one sleepy.
- **Sulphur dioxide** – sulphur dioxide in the air are caused due to the increase in the burning of fossil fuels. It causes diseases of lungs and other lung disorders like wheezing and shortness of breath.
- **Suspended particulate matter (SPM)** – they consist of dust, mist, fumes and smoke. The main components of SPM that affects the health are lead, nickel, arsenic and those present in diesel exhaust. When we breathe these particles it affects our lungs causing lung damage and respiratory problems.

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Water pollution is also harmful to human beings.

- Water is very important for survival. We need clean water for drinking, irrigation of crops and many other purposes.
- If the water resources like the lake, river, streams are polluted and contaminated it will affect our health. If we drink polluted water then diseases like amoebiasis, typhoid and hookworm will affect our health.
- Water is polluted by chemicals like heavy metals, lead, pesticides and hydrocarbon causes hormonal and reproductive problems, damages the nervous system, liver and kidney. Exposure to mercury causes diseases like Parkinson's, Alzheimer's, heart disease and death.
- If the sea beaches are polluted then diseases like rashes, hepatitis, gastroenteritis, diarrhoea, stomach aches and vomiting will happen.
- Water pollution also affects our marine life which is one of the food sources.

Soil pollution

Soil pollution happens when the toxic chemicals, pollutants or contaminants in the soil are high causing risk to the plants, wildlife, human beings and to the soil.
The major causes of soil pollution are:

- Use of chemicals like pesticides, herbicides, insecticides and fertilizers are the main factors.
- The breaking of the underground storage tank
- Leakage of wastes from landfills
- Direct discharge of industrial wastes
- Harmful irrigation practices
- Improper maintenance
- Leakage from sanitary sewage, acid rain falling onto the soil
- Fuel leakage of automobiles that soak into the soil
- Soil pollution can have harmful effects on ecosystems, human beings and plants. It can harm the water and food which are in direct contact with the polluted soil.

Noise pollution

When there is too much noise or an unpleasant sound causing a temporary disruption in the natural balance is known as noise pollution.
The main causes of noise pollution are:

- Industrialization
- Poor urban planning
- Social events
- Transportation
- Construction activities
- Household chores
- Noise pollution causes health issues like
- Hearing problems
- Sleeping disorders

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- Cardiovascular issues
- Trouble in communicating

Radioactive pollution

Radioactive pollution happens when there is the presence of radioactive materials in the environment caused by the emission of harmful radiations like alpha or beta particles or gamma rays.

The main causes of radioactive pollution are:

- Nuclear accidents from nuclear energy generation plants
- The use of nuclear weapons for mass destruction
- Mining
- Spillage of radioactive chemicals
- Tests on radiation
- Cosmic rays

The major effects of radioactive pollution are:

- Genetic mutations
- Diseases like cancer
- Infertility in soils
- Cell destruction

Some of the solutions of radioactive pollution are:

- We should dispose of the radioactive wastes properly like burying the wastes.
- We should properly label the content of any radioactive content so that one can take protective measures to handle it.
- Banning of nuclear tests
- We should think of alternative sources of energy like solar energy, hydro-electric and wind power.
- Proper storage or container should be there for the radioactive materials so that there is no leakage.

Light pollution

By light pollution, we understand the excessive, flashy and unwanted artificial lighting.
The cause of light pollution is mainly due to Industrialization & Modernization.
Following are the adverse effects of light pollution:

- Over-illumination causes headache, fatigue, stress and anxiety.
- Light trespass during night causes the sleeping disorder.
- Glaring on outdoor lights decreases our vision and the chances of accidents increases.

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Conventional and Non-Conventional Sources of Energy

Conventional or Non-renewable Sources

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Coal and Lignite:

Coal is the major source of energy. Coal is the mainstay of India's energy sector accounting for over 50 per cent of primary commercial energy supply in 2010–11.

The gap between the demand and the domestic supply of coal has made it imperative to augment domestic production both from the public sector and the private sector and to expedite the reform process for realizing efficiency gains through increased competition in the sector during the 12th Plan.

Lignite production was 20.44 million tons in 2005-06. According to an estimate, coal reserves in India would last about 130 years.

Types of Coal On the basis of characteristics, heating value, carbon and volatile matter, Coal is divided into mainly the following types:

a) **Anthracite (hard coal)**

- It is hard, black, lustrous, shiny and dense.
- This is the highest grade coal with calorific value of 8,250 to 8,700 kcal/kg.
- It contains 86-98% of carbon.
- Volatile matter is low being just 2-14%.

b) **Bituminous (Soft coal)**

- It is also high grade coal next to anthracite.
- It has a calorific value in the range of 7,500 to 8,700 kcal/kg. It contains about 46-86% carbon.
- Volatile matter is low and can be removed by heating in the absence of air, when it gets converted into coke. More the volatility, lower is the heating value.
- It is used for combustion, hydrogenation, gasification, blending, domestic use and metallurgy.

C) **Lignite** (**Brown coal**)

- It is inferior quality, low grade coal.
- It has laminar (banded) structure with woody, fibrous, brownish black appearance, resembling wood, hence the name. In Latin, Lignum means wood.
- Its calorific value is 6,150 to 7,300 kcal/kg.
- It has a moisture content of about 30-50% before exposure to air.
- Its volatile matter is about 30%. Lignite when exposed to air gets oxidized.
- Due to high moisture, rapid oxidation and low heating value, it is not economical to transport it to distant places.
- It is burned in pit head power plants.

d) **Peat**

- Peat is a solid fuel with highest moisture content.
- It is not fully matured form as it is partially decomposed, so
- It is not true coal.
- Its heating value is much less and is lower than that of wood.

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- It has about 90% moisture.
- It is used as a low grade fuel.

Oil and Natural Gas:

Petroleum is derived from dead animals that lived in remote past. Natural gas has also been produced in the Earth's crust by similar processes and this is also a combustible fuel.
In India, efforts made by the Oil and Natural Gas Corporation (ONGC) and Oil India since the late 1950s have led to the identification of a number of oil and gas deposits both offshore and onshore. The onshore fields were mainly discovered in the Mumbai, Gujarat, Assam and Arunachal Pradesh; and the offshore fields in the sea were notably the Mumbai High fields such as North and South Basin and South Tapti.

Hydrogen-CNG Fuel Centre

The Renewable Energy Ministry on 7th June,2007 unveiled a Rs 25,000 crors roadmap to promote use of hydrogen, with an estimated one million vehicles using it as fuel by 2020 and the gas being used to fire electricity generation units for an aggregate 1,000 mw of electricity.

NON-CONVENTIONAL SOURCES OF ENERGY

The Ministry of Non-Conventional Energy Sources (MNES) created in 1992, is the nodal agency of the Government of India for all matters relating to nonconventional/renewable energy.

Solar Energy

The Sun provides us enormous amounts of energy in the form of solar radiation-energy that travels in small wave packets called photons, reaching the surface of the Earth from a distance of 93 million miles. Radiation energy is released due to thermo-nuclear fusion going on continuously in the Sun.
The solar energy reaching per square metre of the Earth's atmosphere is called the 'Solar Constant' and is equal to 1.36 KW in 12 hours.

- Conversion of solar energy into heat.
- Conversion of solar energy directly into electricity.
- Conversion of solar energy to plants, vegetable or other biological forms and application of solar energy to convert these forms into usable forms of fuel. This may broadly be termed as bio-energy.
- Indirect application of solar energy, such as, harnessing of winds, waves, temperature gradients from the ocean, etc.

Wind Energy

Wind energy is the kinetic energy associated with movement of large masses of air resulting from the differential heating of the atmosphere by the Sun. Hence, wind energy is nothing but the converted form of solar energy. It is estimated that about 106 to 107 MW of usable power is continuously available in the Earth's winds.

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Wind Energy Conversion: The shaft power from the wind turbine can be utilized for a wide variety of purposes, including electricity (AC & DC generation), direct pumping, direct mechanical work, etc. The most common wind turbine system involves a tower mounted multi-bladed rotor facing into the wind, rotating around a horizontal axis and turning an electrical generator or a mechanical gearbox connected to its axis. The maximum power that can be extracted from a wind turbine is 59.3 per cent.

Water Pumping Windmills: Small windmills with direct mechanical drive matched to a pump and tank storage are in extensive use in many parts of the world. These hold significant potential for pumping water irrigation, drinking needs, etc. Improved types of soil water pumping windmills have also been developed in several countries, including India.

Wind Electric Conversion Systems: Wind energy is a high-quality form of mechanical energy that can be converted into electrical energy with minimal energy losses. Since the rotor of a windmill moves periodically, the output may be obtained in the form of alternating current either by using a gearbox or fixing the rotational speed or by allowing speed variations and transforming the generated electrical power.

Ocean Energy

The sea, which is constantly receiving solar radiations and acts as the world's largest natural solar collector, has potential to provide a means of utilizing renewable energy. It acts not only as collector, but also has an enormous storage capacity. Energy from the ocean is available in several forms such as ocean thermal energy, wave energy, tidal energy, salinity gradients, ocean currents, ocean winds and biomass.

Ocean Thermal Energy Conversion

There exists a temperature difference of the order of 20°C between the warm surface water of the sea and the cold deep water, and this natural temperature difference can be used to generate energy. In one OTEC plant, the warm water from the surface with the temperature of 24 to 30°C is brought into one pipe and the cold water at the temperature of about 4 to 8°C is brought in another pipe in the depth of about 1000 meters. These two pipes are used in conjunction with fluid such as ammonia, propane or neon

Tidal Energy

Tides are created by the combined gravitational effect of the Earth, the Moon and the Sun. Though the tide is the universal phenomenon of the Earth's sea-water body, some regions are more favorable for the establishment of such power plant for the commercial production of tidal energy. Primary requirements for the construction of an installation having a capacity over 200 MW are

- an average tide of 5-12 meters;
- the possibility of linkage to a grid in order to accommodate the variable power output of the tidal plant;
- Favorable geographical location and favorable socio-economic and ecological conditions. Bulb type turbines as used in conventional hydro-electric stations have proved to be reliable for generating power from the tides.

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In India, three potential sites have so far been identified, namely, the Gulfs of Kutch and Cambay on the west coast in Gujarat and the Sunder bans along the east coast in West Bengal.

HYDRO ENERGY

The National Hydro-Electric Power Corporation (NHPC) was incorporated in 1975 with the objectives to plan, promote and organize the integrated development of hydro-electric power. NHPC Limited presently has an installation base of 5295 MW from 14 hydropower stations on ownership basis, including projects taken up in Joint Venture.
Some important hydro-electric power projects constructed by NHPC are at Salal and Dulhasti (both in J&K), Tanakpur (Uttarakhand), Chamera (HP), Baira Siul (HP), Chutak (J&K), Teesta Low Dam – III (W.Bengal), Sewa – II (J&K), Teesta – V (Sikkim), Omkareshwar (MP), Dhauliganga – I (Uttarakhand), Indira Sagar(MP), Rangit (Sikkim), Uri – I (J&K), and Loktak (Manipur).

GEOTHERMAL ENERGY

Geothermal energy is the exploitation of heat energy of Earth within 10 km of the Earth's upper crust. Geothermal energy can be processed for generation of power, where the geothermal fluid has a temperature of 130°C.
Geothermal manifestations are widespread in India in the form of 340 Hot Springs localities. Only a few direct utilization schemes have been launched by various agencies. They are in Puga, Chhumuthang, Manikaran and Bakreshwar. Of these, India's most promising geothermal field is in Puga valley in Ladakh. There are number of geothermal wells drilled in the valley. Tattapani in Madhya Pradesh is another promising geothermal area in India.

CNG

Compressed Natural Gas or CNG is a cleaner alternative to the liquid petroleum. CNG Is already in use in countries such as the USA, Japan, Italy, Brazil and New Zealand.
In Delhi, the Supreme Court has directed the operation of city buses exclusively on CNG fuel mode. The government on its part launched CNG pilot project in Delhi as early as 1993. Thanks to this project, CNG is now available in the NCR and most cities of the country.
CNG is cleaner fuel than the conventional fuel (petrol and diesel) as far as PM is concerned. Further, CO, HC and NOX emission for CNG based car are lower because of the catalytic converter fitted with them.

The Division of Disaster Management of Ministry of Home Affairs, Government of India is the ministry for all matters at the Centre except the Drought. The Ministry of Agriculture, Government of India, looks after the Drought Management. The National Contingency Action Plan (NCAP) makes possible in relief and rescue operations without delay.

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National Disaster Management Act 2005

The Parliament of India has passed the National Disaster Management Act in November 2005, which brings a pattern in India's approach to disaster management.
The Act provides for establishment of:

- National Disaster Management Authority (NDMA)
- State Disaster Management Authority (SDMA)
- District Disaster Management Authority (DDMA)
- Constitution of Disaster Response Fund and Disaster Mitigation Fund at National, State and District levels Establishment of NIDM and NDRF.
- It gives penalties for obstruction, false claims, misuse etc.

Environmental Protection Act of 1986

19th November 1986, Environment Protection Act came in force in the Parliament of India in the wake of Bhopal Tragedy. It is under Article 253 of the Indian Constitution. The Environment Protection Act is mainly to the protection and development of the environment from the danger of human beings, other living being, plants and property.
It mainly focuses on the prevention and development of pollution in the environment and the causes of human health if any accident happens.

National Action Plan on Climate Change

National Action Plan on Climate Change (NAPCC) an initiative formulated by Government of India on 30th June 2008 to deal with the future policies and programs for the climatic improvement and adjustment. It put together the national plan on water, renewable energy, energy efficiency agriculture, etc.
The executions of the Action plan are constituted under 8 missions that are responsible to achieve the goals of adaptation and improvement. They are as follows:
National Action Plan on Climate Change (NAPCC) an initiative formulated by Government of India on 30 June 2008 to deal with the future policies and programs for the climatic improvement and adjustment. It put together the national plan on water, renewable energy, energy efficiency agriculture, etc. The executions of the Action plan are constituted under 8 missions that are responsible to achieve the goals of adaptation and improvement. They are as follows:

- **National Solar Mission** – The main objective is to use solar energy for power generation and other uses. To promote the use of solar power, this initiative was started in 2010.
- **National Mission for Enhanced Energy Efficiency** – The main objective is to save and promote maximum energy by developing new policies and measures. In 2009, the Prime Minister's Council approved it on Climate Change.
- **National Mission on Sustainable Habitat** – It emphasized on Energy conservation on urban waste, management recycling which includes the production of power from waste, development of energy efficiency in buildings and use of public transport. Prime Minister approved this mission in 2011.

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- **National Water Mission** – To improve water efficiency through pricing and other measures. The main objective of the mission is to help to preserve water, minimize wastage and to make sure that the distributions of water are done on an equitable basis across and within the states. Ministry of Water Resources, River Development and Ganga Rejuvenation are the members who supported this mission.
- **National Mission for Sustaining the Himalayan Ecosystem** – It aims to preserve the biodiversity, forest conservation and other ecological problems that are causing problems in the Himalayan region.
- **National Mission for a "Green India"** – Its main goal is to expand the forest and promote "Green India" by protecting, refurbishing and enhancing the forests in India which are diminishing. It's taking various measures in responding to climate change by adopting and taking different steps towards it. In 2014, Ministry of Environment and Forests got go-ahead to work on this from the Cabinet.
- **National Mission for Sustainable Agriculture** – The main objective is how climatic change affects crops and their development through various mechanisms. For example, in areas where there are more rains, it focuses on integrated farming, use of water efficiently, soil health management, etc. It got approval from the government in 2010.
- **National Mission on Strategic Knowledge for Climate Change** – It aims for the climatic changes and its impact. The mission tries to improve through research and international collaboration. The mission is run by the Department of Science and Technology.

International Agreements/efforts

- By international agreements, we mean treaties or contract between different countries for different global issues like air pollution, climate change, protection of the ozone layer, etc. International agreements have different names like treaties, pacts, protocols, acts, etc.
- Most of the agreements are legally binding between the countries that have approved them. Each nation has respective responsibilities under the agreements.

Montreal Protocol

The Montreal Protocol on Substance is a global agreement to protect the ozone layer by phasing out the production of various substances that are responsible for ozone reduction. The main objective of the Montreal Protocol was to protect the ozone layer by taking different steps to manage the production and consumption of depleting substances (ODS) and to remove it completely. It was agreed on 26 August 1987, and entered into force on 16 September 1989, following the first meeting in Helsinki, May 1989.
Signed: 16 September 1987

Rio Summit

Rio Summit or The United Nations Conference on Environment and Development (UNCED), also known as the Rio de Janeiro Earth Summit was the major United Nations conference which was held on Rio from 3rd to 14th June 1992.

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The main objective of the summit was to stop the destruction of various natural resources and to handle pollution which is affecting the planet. And the condition of the global environment and its association between economics, science and the environment in a political context. 105 countries participated in the Earth Summit, for this development.

Convention on Biodiversity

The Convention on Biological Diversity (CBD) is an international treaty with three main objectives:-

1. Conservation of biodiversity
2. Sustainable use of biodiversity
3. Fair and equitable sharing of the benefits which occur from the genetic recourses.

This treaty was signed on 5th June 1992 and was effective from 29th December 1993. Over 196 countries participated in Rio de Janeiro.

UNFCCC – United Nation Framework Convention on Climate Change

- The UNFCCC secretariat (UN Climate Change) was established in 1992 when countries adopted the United Nations Framework Convention on Climate Change (UNFCCC).
- The UNFCCC entered into force on 21 March 1994. Today, it has near-universal membership. The 197 countries that have ratified the Convention are called Parties to the Convention.
- The convention is legally non-binding but makes provisions for the meeting called 'protocols' where negotiating countries can set legally binding limits.

Kyoto Protocol

The Kyoto Protocol is an international agreement which was extended on the 1992 United Nations Framework Convention on Climate Change like to reduce the greenhouse gas emission based on scientific agreement.

- This Protocol was signed on 11th December 1997 and was effective from 16th February 2005 in Kyoto. Over 192 countries participated in this.
- India has ratified the second commitment period of the Kyoto Protocol known as the Doha Amendment to the protocol

Paris Agreement

Paris Agreement is an international agreement to fight against climate change. The main objective of this agreement was to stop global warming and the threat of dangerous climatic changes. Over 195 countries participated in the Paris Agreement from 30th November to 11th December 2015.

- The Paris Agreement opened for signature on 22 April 2016 – Earth Day – at UN Headquarters in New York. It entered into force on 4 November 2016.
- Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels

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International Solar Alliance

In International Solar Alliance over 122 countries participated and the same was initiated by India and founded in the year 2015.

- The main objective of this alliance is to increase the use of solar energy among the International Solar Alliance member countries in a convenient, safe, affordable and sustainable manner.
- Vision and mission of the International Solar Alliance is to provide a dedicated platform for cooperation among solar resource-rich countries where the global community, including bilateral and multilateral organizations, corporate, industry, and other stakeholders, can make a positive contribution to assist and help achieve the common goals of increasing the use of solar energy in meeting energy needs of prospective ISA member countries in a safe, convenient, affordable, equitable and sustainable manner.
- Its major objectives include global deployment of over 1,000GW of solar generation capacity and mobilization of investment of over US $1000 billion into solar energy by 2030.

1. The arsenic pollution in ground water in Bangladesh and parts of India is due to
(A) industrial waste
(B) thermal power plants
(C) natural sources
(D) agricultural practices

2. Among the following air pollutants which directly impacts human health as well as climate?
(A) Soot
(B) Sulphur dioxide
(C) Oxides of nitrogen
(D) Chlorofluoro carbons

3. **Assertion (A):** The problems of environmental sustainability are difficult to resolve.
Reason (R): Our understanding how environment works and how different human choices affect environment is inadequate.

Choose the correct code:
(A) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(B) Both (A) and (R) are correct, but (R) is not the correct explanation of (A).
(C) (A) is true and (R) is false.
(D) (A) is false and (R) is true.

4. The percentage share of electrical power from solar energy in the total electric power generation from all renewable energy sources sought to be achieved by Indian government by the year 2022, is
(A) ~ 57.1%

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(B) ~ 65.5%
(C) ~ 47.5%
(D) ~ 75%

5. As part of Intended Nationally Determined contributions, Indian government through additional forest and tree cover has resolved to create an additional carbon sink (in terms of carbon dioxide equivalent) by year 2030 to the extent of
(A) 3.5 to 4 billion tons
(B) 2.5 to 3 billion tons
(C) 1.5 to 2 billion tons
(D) 1 to 1.5 billion tons

6. Which of the following is a meteorological hazard?
(A) Avalanche
(B) Coastal erosion
(C) Landslide
(D) Blizzard

7. Which of the following is the largest source of water pollution in major rivers of India?
(A) Untreated sewage
(B) Agriculture run-off
(C) Unregulated small scale industries
(D) Religious practices

8. Sustainable development goals have specific targets to be achieved by
(A) 2022
(B) 2030
(C) 2040
(D) 2050

9. Indian government's target of producing power from biomass by the year 2022, is
(A) 50 MW
(B) 25 MW
(C) 15 MW
(D) 10 MW

10. **Assertion (A):** Conserving our soil resources is critical to human survival.
Reason (R): Soil is home to many micro-organisms and contains minerals.

Choose the correct code:
(A) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(B) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(C) (A) is true and (R) is false.
(D) (A) is false and (R) is true.

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11. World Meteorological Organization's (WMO) objective has been to reduce the number of deaths due to hydro meteorological disasters over the decade 2010-2019 by (with reference to the decade 1994-2003)
(A) 25%
(B) 50%
(C) 75%
(D) 80%

12. Identify the air pollutant in urban areas which irritates eyes and also respiratory tract of human beings.
(A) Particulate matter
(B) Oxides of nitrogen
(C) Surface ozone
(D) Carbon monoxide

13. Which of the following phenomena is not a natural hazard?
(A) Wildfire
(B) Lightning
(C) Landslide
(D) Chemical contamination

14. As part of National Climate Change Policy, Indian government is planning to raise the installed capacity of renewable energy by the year 2030 to
(A) 175 GW
(B) 200 GW
(C) 250 GW
(D) 350 GW

15. At present, in terms of per capita energy consumption (kWh/year), identify the correct sequence.
(A) Brazil > Russia > China > India
(B) Russia > China > India > Brazil
(C) Russia > China > Brazil > India
(D) China > Russia > Brazil > India

16. Inside rural homes, the source/sources of Nitrogen Oxide Pollution may be:
(a) Unvented gas stoves
(b) Wood stoves
(c) Kerosene heaters

Choose the correct code:
(A) (a) and (b) only
(B) (b) and (c) only
(C) (b) only
(D) (a), (b) and (c)

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17. Which of the following pollutants can cause cancer in humans ?
(A) Pesticides
(B) Mercury
(C) Lead
(D) Ozone

18. **Assertion (A):** People population control measures do not necessarily help in checking environmental degradation.
Reason (R): The relationship between population growth and environmental degradation is rather complex.

Choose the correct answer from the following
(A) Both (A) and (R) are true and (R) is the correct explanation of (A).
(B) Both (A) and (R) are true but (R) is not the correct explanation of (A).
(C) (A) is true but (R) is false.
(D) (A) is false but (R) is true.

19. In which of the countries per capita use of water is maximum
(A) USA
(B) European Union
(C) China
(D) India

20. India's contribution to total global carbon dioxide emissions is about
(A) ~ 3 PERC
(B) ~ 6 PERC
(C) ~ 10 PERC
(D) ~ 15 PERC

21. Two earthquakes A and B happen to be of magnitude 5 and 6 respectively on Richter Scale. The ratio of the energies released EB/EA will be approximately
(A) ~ 8
(B) ~ 16
(C) ~ 32
(D) ~ 64

22. Which of the following combinations represent renewable natural resources
(A) Fertile soil, fresh water and natural gas
(B) Clean air, phosphates and biological diversity
(C) Fishes, fertile soil and fresh water
(D) Oil, forests and tides

23. In the recently launched Air Quality Index in India, which of the following pollutants is not included
(A) Carbon monoxide
(B) Fine particulate matter
(C) Ozone
(D) Chlorofluorocarbons

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24. The factors which are most important in determining the impact of anthropogenic activities on environment are
(A) Population, affluence per person, land available per person are
(B) Population, affluence per person and the technology used for exploiting resources
(C) Atmospheric conditions, population and forest cover
(D) Population, forest cover and land available per person

25. In terms of total CO_2 emissions from a country, identity the correct sequence:
(A) U.S.A. > China > India > Russia
(B) China > U.S.A. > India > Russia
(C) China > U.S.A. > Russia > India
(D) U.S.A. > China > Russia > India

26. Match List – I and List – II and identify the correct code:

a. World Health Day	i.16th September
b. World Population Day	ii. 1st December
c. World Ozone Day	iii. 11th July
d. World AIDS Day	iv. 7th April

Codes:

	a	b	c	d
(A)	i	ii	iii	iv
(B)	iv	iii	i	ii
(C)	ii	iii	iv	i
(D)	iii	iv	ii	i

27. Which of the anthropogenic activity accounts for more than 2/3rd of global water consumption?
(A) Agriculture
(B) Hydropower generation
(C) Industry
(D) Domestic and Municipal usage

28. One of the anthropogenic sources of gaseous pollutants chlorofluorocarbons (CFCs) in air is
(A) Cement Industry
(B) Fertiliser industry
(C) Foam industry
(D) Pesticide industry

29. The cyclone “Hudhud” hit the coast of which State?
(A) Andhra Pradesh
(B) Karnataka
(C) Kerala
(D) Gujarat

30. Which of the following is not a renewable natural resource?

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(A) Clean air
(B) Fresh water
(C) Fertile soil
(D) Salt

31. The population of India is about 1.2 billion. Take the average consumption of energy per person per year in India as 30 Mega Joules. If this consumption is met by carbon based fuels and the rate of carbon emissions per kilojoule is l5 x l06 kgs, the total carbon emissions per year from India will be
(A) 54 million metric tons
(B) 540 million metric tons
(C) 5400 million metric tons
(D) 2400 million metric tons

32. Which of the following cities has been worst affected by urban smog in recent times?
(A) Paris
(B) London
(C) Los Angeles
(D) Beijing

33. The primary source of organic pollution in fresh water bodies is
(A) run-off urban areas
(B) run-off from agricultural forms
(C) sewage effluents
(D) industrial effluents

34. 'Lahar' is a natural disaster involving
(A) eruption of large amount of material
(B) strong winds
(C) strong water waves
(D) strong wind and water waves

35. In order to avoid catastrophic consequences of climate change, there is general agreement among the countries of the world to limit the rise in average surface temperature of earth compared to that of pre-industrial times by
(A) 1.5 oC to 2 oC
(B) 2.0 oC to 3.5 oC
(C) 0.5 oC to 1.0 oC
(D) 0.25 oC to 0.5 oC

36. The National Disaster Management Authority functions under the Union Ministry of
(A) Environment
(B) Water Resources
(C) Home Affairs
(D) Defence

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37. Match List - I and List - II and select the correct answer from the codes given below:

List – I	List - II
(a) Flood	(1) Lack of rainfall of sufficient duration
(b) Drought	(2) Tremors produced by the passage of vibratory waves through the rocks of the earth
(c) Earthquake	(3) A vent through which molted substances come out
(d) Valcano	(4) Excess rain and uneven distribution of water

Codes:

	(a)	(b)	(c)	(d)
(A)	4	1	2	3
(B)	2	3	4	1
(C)	3	4	2	1
(D)	4	3	1	2

38. Which one of the following green house gases has the shortest residence time in the atmosphere?
(A) Chlorofluorocarbon
(B) Carbon dioxide
(C) Methane
(D) Nitrous oxide

39. Consider the following statements and select the correct answer from the code given below:
(i) Rajasthan receives the highest solar radiation in the country.
(ii) India has the fifth largest installed wind power in the world.
(iii) The maximum amount of wind power is contributed by Tamil Nadu.
(iv) The primary source of uranium in India is Jaduguda.

(A) (i) and (ii)
(B) (i), (ii) and (iii)
(C) (ii) and (iii)
(D) (i) and (iv)

40. Arrange the following books in chronological order in which they appeared. Use the code given below:
(i) Limits to Growth
ii) Silent Spring
(iii) Our Common Future
(iv) Resourceful Earth
Codes:
(A) (i), (iii), (iv), (ii)
(B) (ii), (iii), (i), (iv)
(C) (ii), (i), (iii), (iv)
(D) (i), (ii), (iii), (iv)

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41. Which one of the following continents is at a greater risk of desertification?
(A) Africa
(B) Asia
(C) South America
(D) North America

42. "Women are closer to nature than men." What kind of perspective is this?
(A) Realist
(B) Essentialist
(C) Feminist
(D) Deep ecology

43. Which one of the following is not a matter a global concern in the removal of tropical forests?
(A) Their ability to absorb the chemicals that contribute to depletion of ozone layer.
(B) Their role in maintaining the oxygen and carbon balance of the earth.
(C) Their ability to regulate surface and air temperatures, moisture content and reflectivity.
(D) Their contribution to the biological diversity of the planet.

44. The most comprehensive approach to address the problems of man-environment interaction is one of the following:
(A) Natural Resource Conservation Approach
(B) Urban-industrial Growth Oriented Approach
(C) Rural-agricultural Growth Oriented Approach
(D) Watershed Development Approach

45. The major source of the pollutant gas, carbon mono-oxide (CO), in urban areas is
(A) Thermal power sector
(B) Transport sector
(C) Industrial sector
(D) Domestic sector

46. ln a fuel cell driven vehicle, the energy is obtained from the combustion of
(A) Methane
(B) Hydrogen
(C) LPG
(D) CNG

47. By the year 2022, the Climate Change Action Plan of Government of India aims at installing
(A) 20,000 MW of wind power
(B) 25,000 MW of wind power
(C) 20,000 MW of solar power
(D) 10,000 MW of solar power

48. Which one of the following biosphere reserves has UNESCO recognition?

(A) Manas
(B) Kanchenjunga
(C) Seshachalam Hills
(D) Greater Nicobar

49. Which activity contributes to water pollution more than any other throughout world ?
(A) Agriculture
(B) Hydroelectric power generation
(C) Industry
(D) Urbanisation

50. Match List – I with List – II and find the correct answer from the codes given below:

List – I (Biosphere Reserve)	List – II (Area of Location)
a. Nilgiri	i. Deccan Peninsula
b. Manas	ii. Chhattisgarh
c. Similipal	iii. Eastern Himalaya
d. Achankmar- Amarkantak	iv. Western Ghat

Codes :
a b c d
(A) i ii iii iv
(B) ii iii iv i
(C) iii iv ii i
(D) iv iii i ii

51. G5 are the five most important emerging economies of world. Which one of the following does not form part of G5?
(A) Mexico
(B) Brazil
(C) China
(D) Korea

52. Which of the following nations has the maximum per capita emissions of carbon di-oxide?
(A) China
(B) Japan
(C) USA
(D) India

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53. The world population growth rate at a certain reference year was 3.5%. Assuming exponential growth of population, after how many years, the population of the world would have increased by a factor 16?
(A) ~ 80 years
(B) ~ 40 years
(C) ~ 160 years
(D) ~ 320 years

54. The phrase “tragedy of commons” is in the context of
(A) tragic even related to damage caused by release of poisonous gases.
(B) tragic conditions of poor people.
(C) degradation of renewable free access resources.
(D) climate change.

55. Kyoto Protocol is related to
(A) Ozone depletion
(B) Hazardous waste
(C) Climate change
(D) Nuclear energy

56. Which of the following is a source of emissions leading to the eventual formation of surface ozone as a pollutant?
(A) Transport sector
(B) Refrigeration and Air-conditioning
(C) Wetlands
(D) Fertilizers

57. The smog in cities in Indian mainly consists of
(A) Oxides of sulphur
(B) Oxides of nitrogen and unburnt hydrocarbons
(C) Carbon monoxide and SPM
(D) Oxides of sulphur and ozone

58. Which of the following types of natural hazards have the highest potential to cause damage to humans?
(A) Earthquakes
(B) Forest fires
(C) Volcanic eruptions
(D) Droughts and Floods

59. The percentage share of renewable energy sources in the power production in India is around
(A) 2-3%
(B) 22-25%
(C) 10-12%
(D) < 1%

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(A) 2-3%
(B) 22-25%
(C) 10-12%
(D) < 1%

66. Which of the following is a source of methane?
(A) Wetlands
(B) Foam Industry
(C) Thermal Power Plants
(D) Cement Industry

67. ‘Minamata disaster’ in Japan was caused by pollution due to

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(A) Lead
(B) Mercury
(C) Cadmium
(D) Zinc

68. Biomagnification means increase in the
(A) concentration of pollutants in living organisms
(B) number of species
(C) size of living organisms
(D) biomass

69. Nagoya Protocol is related to
(A) Climate change
(B) Ozone depletion
(C) Hazardous waste
(D) Biodiversity

70. The second most important source after fossil fuels contributing to India's energy needs is
(A) Solar energy
(B) Nuclear energy
(C) Hydropower
(D) Wind energy

ANSWER

1	C	2	A	3	A	4	A	5	B
6	D	7	A	8	B	9	D	10	A
11	B	12	C	13	D	14	D	15	C
16	D	17	A	18	A	19	A	20	B
21	C	22	A	23	D	24	C	25	B
26	B	27	A	28	C	29	A	30	D
31	W	32	D	33	C	34	A	35	A
36	C	37	A	38	C	39	D	40	C
41	A	42	B	43	A	44	D	45	B
46	B	47	C	48	D	49	A	50	D
51	D	52	C	53	A	54	C	55	C
56	A	57	B	58	D	59	C	60	C
61	C	62	A	63	B	64	D	65	C
66	A	67	B	68	A	69	D	70	C

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HIGHER EDUCATION SYSTEM

Following are the important bodies, which plays an important role in higher education system in India.

- University Grants commission(UGC)
- all India Council for technical education(AICTE)
- Distance Education Council (DEC)
- Indian Council for Agriculture Research (ICAR)
- Bar Council of India (BCI)
- National Council for Teacher Education (NCTE)
- Rehabilitation Council of India (RCI)
- Medical Council of India (MCI)
- Pharmacy Council of India (PCI)
- Indian Nursing Council (INC)
- Dentist Council of India (DCI)
- Central Council of Homeopathy (CCH)
- Central Council of Indian Medicine (CCIM)

Central government is responsible to take the policies related to the higher education. It also gives different grant to the Central universities. Whether an educational system will be deemed or not is also decided by central government on the recommendation of the UGC. At present, there are 16 Central universities in the country.

Type of Institutions	Numbers
Central Universities	50
State Universities	404
Institution deemed to be University	126
Private Universities	340
Total	920

Structure of Indian education system

In this section we briefly discuss about the Indian education system. First, we will talk about higher education in India. Following four society have power to give higher education.

1. University
2. Institute of Technology
3. College
4. Open University

One can get degree from education system. Following are degrees, one may acquire after school leaving.

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1. Higher Secondary School Certificate
2. Secondary School Certificate
3. Diploma
4. Bachelor³s Degree
5. Postgraduate Diploma
6. Master³s Degree
7. Master of Philosophy
8. Post-Master Degree
9. Doctorate
10. Doctor of Laws
11. Doctor of Literature
12. Doctor of Science

Ancient education system in India

From education point of view India was very rich country at ancient times too. Following system were widely used in ancient India.

Gurukul system

Gurukul (ashram) was a type of school in India, residential in nature, with pupils living in proximity to the teacher (guru). In a gurukul, students would reside together as equals, irrespective of their social standing, learnt from the guru and distribute work in themselves to help the guru in his day-to-day life. At the end of studies, pupil would be ready to offer gurudakshina (one time fees) to the guru. The gurudakshina is a traditional gesture of acknowledgment, respect and thanks.

In India the Guru or the teacher is held in high esteem. Indeed, there is an understanding that if the devotee were presented with the guru and God, first he would pay respect to the guru, since the guru had been instrumental in leading him to God.

Vedic University

Nalanda is one of the great Vedic university in India. Nalanda is the name of an ancient university in Bihar, India which was a Buddhist center of learning from 427 CE (AD) to 1197 CE (AD). It has been called as ™one of the first great universities™ in recorded history. There were universities like Taxila, Ujjain, Karachi etc. for medicine and learning including mathematics and astronomy.

In compiling the vedic mantras, VED VYASA edited them into four books, the Rig-Veda, the Yajur-Veda, the Sama-Veda, and the Atharva-Veda

The Vedas are a large body of texts originating in ancient India. Composed in Vedic Sanskrit, the text constitutes the oldest layer of Sanskrit literature and the oldest scriptures of Hinduism.Scholars have determined that the Rig Veda, the oldest of the four Vedas, was composed about 1500 B.C.

British and Indian Education system

Since English was increasingly being employed as the language of instruction, during 1852-1853 petitions were sent to the British Parliament in support of both establishing and adequately funding university education in India which resulted in the Education Dispatch of July 1854 which helped in shaping the Indian education system . Educational reforms in the early 20th century led towards the nationalization of many universities.

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Britishers did a lot to establish good and healthy education system in India.

1. Established a Department of Public Instruction in each province of British India.
2. Established teacher-training schools for all levels of instruction.
3. Increased the number of Government colleges ,vernacular schools and high-schools .
4. The Department of Public Instruction was in place by 1855.
5. By 185k a number of universities were established modeled on the University of London.

Education of Indians had become a topic of interest among East India Company officials. The policy³s goal was

1. to advance knowledge of Indians and
2. to employ that knowledge in the East India Company

Post Independence education

India's first education minister recommended strong central government control over education throughout the country, with a uniform educational system and introduced right to education.

Every child between the ages of 6 to 14 years has the right to free and compulsory education. The government schools shall provide free education to all the children. Private schools shall admit at least 25% of the children in their schools without any fee.
The Indian government lays great emphasis on primary education up to the age of fourteen years (referred to as Elementary Education in India.) The Indian government has also banned child labour in order to ensure that any children do get an opportunity to nurture. Education has also been made free for children for six to 14 years of age. The District Primary Education Programme (DPEP) was launched in 1994 with an aim to universalize primary education in India by reforming and vitalizing the existing primary education system

NCERT

The NCERT was established in 1961. It functions as a resource centre in the field of school education and teacher education. Publication of school textbooks and other educational material like teachers³ guides/manuals etc. are its major functions.

NCERT is an autonomous body fully funded by the Ministry of Human Resource and Development (MHRD)

There is a common educational structure (10+2+3) followed all over the country. Its similar to the USA but unlike to the one being followed in the UK

Vocational Education System

Vocational education is that form of instruction designed to prepare people for industrial or commercial employment. It can be acquired either formally in trade schools, technical secondary schools, or in on-the-job training programs or, more informally, by picking up the necessary skills on the job. is imparted through Industrial Training Institutes (ITIs) and polytechnics. Vocational study falls under the purview of MHRD. The all india council of vocational education is responsible for planning, guiding and coordinating the programme at the national level. State Councils for Vocational Education (SCVEs) perform similar functions at the state

Statutory body and their functions

The origin of the Indian Education Department dates back to pre-Independence days when for the first time a separate Department was created in 1910 to look after education. However, soon after

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India achieved its Independency on 15th August. 1947, a full fledged Ministry of Education was established on 29th August 1947. The nomenclature and responsibilities of the Education Department has undergone changes from time to time since Independence

University Grants Commission (UGC)

University Grants Commission (UGC) established by UGC Act, 1956, Ministry of HRD on the recommendation of Ramakrishana Commision.

Statutory Mandate Coordination and determination of standards in higher education and research in the country

Primary Function Release of grants to universities and colleges

Other Functions Recognition of Universities and colleges (including eligibility for central grants) specification of degrees, Minimum standards of instruction, common pay scales, common facilities and institutional accreditation through NAAC

Distance Education Council (DEC)

Distance Education Council (DEC) established by Sec. 25 of IGNOU Act, 1985, Ministry of HRD. (Dr. D.S. Kothari Recommendation)

Statutory Mandate Promotion, coordination and determination of standards of the open universities and distance education systems in the country.

Primary Function Release of grants to open universities and correspondence course institutes

Other Functions Initiated assessment and accreditation activities

All India Council for Technical Education

All India Council for Technical Education (AICTE) established by AICTE Act, 1987, Ministry of HRD,

Statutory Mandate Planning and coordinated development of technical education in the country

Primary Function Approval of degree and diploma programs in engineering, architecture, pharmacy and hotel management

Other Functions Funding for institutional and faculty development, pay scales and qualifications of teachers accreditation through NAAC

In 2016, three important initiatives were taken up by AICTE. First one was a responsibility given by MHRD to evolve a national MOOCs platform SWAYAM. Second one is that of launching a Smart India Hackathon-2017 challenging the young bright talented students of technical colleges to solve the 598 problems of 29 different Government departments. Third one is that of launching of an AICTE's Student Start up Policy by Hon. President on Nov 16, during visitors conference from rashtrapati Bhavan. In 2009, the Union Minister of Education formally communicated his intentions of closing down AICTE and related body, the UGC. This later led to reforms in the way the AICTE approves institutes, and to establishing the National Board of Accreditation (NBA) as an independent body.

Medical Council of India (MCI)

Medical Council of India (MCI) established by MCI Act, 1953, Ministry of Health,

Statutory Mandate To establish standards in medical education and to define medical qualifications in India and abroad

Primary Function Registration of medical practioners and recognition of medical institutions

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Other Functions Eligibility criteria for admissions¡ exam. for recognition of foreign qualifications for practice in India.

The Council of Architecture

The Council of Architecture (COA) established by The Architects Act, 1972, Ministry of Urban Development.

Statutory Mandate Regulate profession and practice of architects and town planners in India

Primary Function Registration of architects, maintaining standards of education, recognized qualifications and standards of practice

Other Functions Maintaining the register of architects and make recommendations with regard to recognition and de-recognition of a qualification.

Indian Nursing Council

Indian Nursing Council (INC) established by the INC Act, 1947, Ministry of Health.

Statutory Mandate Uniform standards of training for Nurses

Primary Function Accepts qualifications awarded by universities within and outside India

Other Functions Collection and compilation of data relating to nurses, midwives, health visitors.

Rehabilitation Council of India

Rehabilitation Council of India (RCI) established by RCI Act, 1992, Ministry of Social Justice

Statutory Mandate Standardize and regulate the training of personnel and professions in the field of rehabilitation and special education.

Primary Function Recognition of institutions for physiotherapy and related fields.

Other Functions Registration of professionals, assessment and accreditations¡ promotion of barrier free environment.

National Council For Teacher Education

National Council For Teacher Education (NCTE), NCTE Act, 1993

Statutory Mandate Planned and Coordinated development of the teacher education in the country.

Primary Function Recognition of teacher education institutions.

Other Functions Lay down norms and standards

Indian Council for Agricultural Research

Indian Council for Agricultural Research (ICAR), Ministry of Agriculture. It is not a statutory body

Statutory Mandate Coordinate agricultural research and education

Primary Function Coordinate and fund agricultural education and research in 30 state and 1 central and several deemed universities for agriculture.

Other Functions Accredit agriculture universities, hold joint admission tests.

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Bar Council of India

Bar Council of India (BCI) established by The Advocates Act, 1962, Ministry of Law

Statutory Mandate Lay down standards of professional conduct and standards of legal education.

Primary Function Lay down standards of professional conduct and standards of legal education.

Other Functions Listing of members of bar¡ listing of foreign universities whose qualifications are approved in India.

There are various Educational Statutory bodies in India, these are namely:

1. All India Council for Technical Education (AICTE)
2. All India Council of Technical Education (AICTE)
3. Central Council of Homeopathy (CCH)
4. Central Council of Indian Medicine (CCIM)
5. Central Board of Secondary Education (CBSE)
6. Central Hindi Directorate
7. Central Institute of Educational Technology (CIET)
8. Central Institute of English and Foreign Languages (CIEFL)
9. Central Institute of Indian Languages (CIIL)
10. Central Tibetan Schools Administration (CTSA)
11. Commisssion for Scientific and Technical Terminology (CSTT)
12. Council of Architecture (COA)
13. Copyright Office, India
14. Distance Education Council (DEC)
15. Dentist Council of India (DCI)
16. Educational Consultants India Limited (EDCIL) 1k. Education Support in India
17. Indian Council of Philosophical Research (ICPR)
18. Indian Council of Social Science Research (ICSSR)
19. Indian Institute of Advanced Study (IIAS)
20. Indian Council of Historical Research (ICHR)
21. Kendriya Hindi Sansthan
22. Kendriya Vidyalaya Sangathan (KVS)
23. Medical Council of India (MCI)
24. National Assessment and Accreditation Council (NAAC)
25. National Bal Bhavan
26. National Book Trust
27. National Council for Promotion of Sindhi Language (NCPSL)
28. National Council of Educational Research and Training (NCERT)

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29.National Institute of Educational Planning and Administration (NIEPA)

30.National Institute of Open Schooling (NIOS)

31.National Institute of Pharmaceutical Education and Research (NIPER)

32.National Institute of Technical Teachers³ Training and Research (NITTTR)

33.National Commission for Minority Educational Institutions (NCMEI)

34.Navodaya Vidyalaya Samiti (NVS)

35.National Council for Teacher Education (NCTE) 3k. National Literacy Mission

36.Oversight Committee

37.Pharmacy Council of India (PCI)

38.Rehabilitation Council of India (RCI)

39.Rashtriya Sanskrit Sansthan

40.Sakshat - Education Portal, Government of India

41.Sarva Shiksha Abhiyan (SSA)

42.State Resource Centre for Non-Formal Education, Chennai

43.University Grants Commission (UGC)

Quality and Quality Assessment

In order to evaluate performance of an institution and bring about a measure of accountability a mechanism of accreditation has been developed by UGC. This is an autonomous council under UGC called National Accreditation and Assessment Council (NAAC) with a purpose to carry out periodic assessment of universities and colleges. NAAC has evolved a methodology of assessment which involves self-appraisal by each university/college and an assessment of the performance by an expert committee.

Similarly, for technical education, AICTE has established its own accreditation mechanism for its institutions through the National Board of Accreditation (NBA).

NAAC has identified the following seven criteria to serve as the basis of assessment procedures:

1. Curricular Aspects
2. Teaching-learning and Evaluation
3. Research, Consultancy and Extension
4. Infrastructure and Learning Resources
5. Student Support and Progression
6. Governance and Leadership

k. Innovative practice

Elementary Education in India

Education is important not only for development of one³s personality, but also for the sustained growth of nation.It is the foundation on which the development of every citizen and the nation as a whole hinges. The quality of elementary education in India has also been a major cause of worry for government

Sarva Siksha Abhiyan

The current scheme for universalization of Education for All is the SARVA SHIKSHA ABHIYAN which is

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one of the largest education initiatives in the world. After the District Primary Education Programme (DPEP) of 1994, the govt. has now launched the "Sarva Shiksha Abhiyan" or SSA. Sarva Shiksha Abhiyan was launched in 2001 to universalize and improve the quality of elementary education in India. It has set 200k as the deadline for providing primary education in India and 2010 as the deadline for providing useful and relevant elementary education to all children in the 6 to 14 age group.

Every child between the ages of 6 to 14 years has the right to free and compulsory education. The government schools shall provide free education to all the children. Private schools shall admit at least 25% of the children in their schools without any fee.

Education in Urban and Rural areas

Despite all the efforts of the government, universalization of education in India remains a distant dream. While the literacy rate is 72.99% according to 2011 census, the female literacy rate is 64.64% & Male literacy rate 80.89%. While 84.11.0% urban people are literate, 67.77% of the rural population is literate.

School education

Schooling system in India is a two tire system. First 10 years is a general study followed by two years of senior secondary education. The primary education system is also two tire system. The first five years is the primary stage and the coming next three years is upper primary stage or middle school.

Secondary education system

Secondary education can be instrumental in shaping and directing a child for his bright future. Secondary education serves as a link between primary and higher education. A child³s future depends a lot on type of education the child receives. Significant feature of India³s secondary school system is the emphasis on inclusion of the disadvantaged sections of the society. Another feature of India³s secondary school system is its emphasis on profession based vocational training to help students attain skills for finding a vocation of his/her choosing.

The Secondary education is supported by the following organizations under the administrative control of the Union Department of Education: Some of the institutes are:

- National Council of Educational Research and Training (NCERT)
- Central Board of Secondary Education (CBSE)
- National Institute of Open Schooling (NIOS)

The National Policy on Education (NPE), 1986, has provided for environment awareness, science and technology education, and introduction of traditional elements such as yoga into the Indian secondary school system

NCERT is an autonomous body fully funded by the Ministry of Human Resource and Development (MHRD). The NCERT was established in 1961. It functions as a resource centre in the field of school education and teacher education. Publication of school textbooks and other educational material like teachers guides/manuals etc. are its major functions. It aims at making environmental education an integral part of curriculum in school education.

Central board of secondary education

The CBSE was set up by a special resolution of the Government of India in 1929 at Ajmer with a view to play a useful role in the field of Secondary Education and to raise its standard.

The Main functions of the board are: to conduct Class X and XII examinations and grant certificates, to prescribe courses of instructions, prescribe conditions for examinations, and to affiliate institutions for the purpose of examinations. The CBSE also conducts all India entrance examinations at the under graduate level for pre- medical/pre-dental, engineering and architecture courses.

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The CBSE has constantly been engaged in process of curriculum design, in-service teacher empowerment programmes and development of textual material.

CBSE has introduced CONTINUOUS AND COMPREHENSIVE EVALUATION (CCE) at the secondary level. The scheme of CCE discourages mechanical testing. It envisages employment of variety of tools and techniques for assessment in informal and formal settings which are more interesting, relevant and meaningful and involve learners for greater participation and learning.

It is a system of school based assessment that covers all aspects of student³s development. It emphasizes two fold objectives. Continuity in evaluation and assessment of broad based learning. CCE will cover the scholastic and co scholastic areas of school education.

National policy of education

In our national perception, Education refines sensitivities and perceptions that contribute to national cohesion, a scientific temper and independence of mind and spirit - thus furthering the goals of socialism, secularism and democracy enshrined in our Constitution. The government is committed to providing education through main- stream schools for children with disabilities. The need for inclusive education arises precisely because it is now well understood that most children with disabilities can, with motivation and effort on the part of teaching institutions, become an integral part of those institutions. There is a common educational structure(10+2+3) followed all over the country.

Education level	Years
Pre primary	(FOR 1 YEAR)
Primary	(GRADE 1-5)
Middle	(GRADE 6-8)
Secondary	(GRADE 9-10)
Senior Secondary	(GRADE11-12)

Fashion Technology

India which has always been a centre for the textile and garment trade. Now the fashion industry has become so specialized that it encompasses a vast field of studies in design, concept management, design production management, quality control, planning, fabric design, printing, fashion accessory design, fashion merchandising, textile science, colour mixing, marketing and so on. National Institute of Fashion Technology was set up in 1986 under the aegis of the Ministry of Textiles, Government of India. It has emerged as the premier Institute of Design, Management and Technology, developing professionals for taking up leadership positions in fashion business in the emerging global scenario.

The online projects encourage our students to collaborate, cooperate and communicate with the students all over the world. This use of cyber space has led to the globalization of education.

University grants commission

The University Grants Commission (UGC) of India is a statutory body set up by the Indian Union government in 1956, and is charged with coordination, determination and maintenance of standards of higher education. It provides recognition to universities in India, and disburses funds to such recognized universities and colleges. Its headquarters is in New Delhi, and six regional centers in Pune, Bhopal, Kolkata, Hyderabad, Guwahati and Bangalore.

1. encourages contact between students and faculty,

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2. develops reciprocity and cooperation among students,
3. encourages active learning,
4. gives prompt feedback,
5. emphasizes time on task,
6. communicates high expectations, and
7. Respects diverse talents and ways of learning

A Central University or a Union University in India is established by Act of Parliament and are under the purview of the Department of Higher Education in the Union Human Resource Development Ministry. In general, universities in India are recognized by the University Grants Commission (UGC), which draws its power from the University Grants Commission Act, 1956. The types of universities controlled by the UGC include:

State universities are run by the state government of each of the states and territories of India, and are usually established by a local legislative assembly act.

Deemed university or Deemed-to-be-University, is a status of autonomy granted by the Department of Higher Education on the advice of the UGC, under Section 3 of UGC Act, 1956.

Private universities are approved by the UGC. They can grant degrees but they are not allowed to have off-campus affiliated colleges.

Funding Agency

Government or Non-Government organization providing monetary grant for research. Following are the major funding agencies in India

1. University Grants Commission (UGC), New Delhi. www.ugc.ac.in
2. Indian Council of Social Science Research (ICSSR), New Delhi www.icssr.org
3. Department of Science and Technology (DST) New Delhi . www.dst.gov.in
4. Council of Scientific and Industrial Research (CSIR), New Delhi. www.csir.res.in
5. Department of Atomic Energy (DAE)¡ BRNS. www.barc.ernet.in
6. Department of Biotechnology (DBT), New Delhi. www.dbtindia.nic.in
7. Department of Non Conventional Energy Sources (DNES), New Delhi. www.mnre.gov.in
8. Defence Research and Development Organization (DRDO). www.drdo.nic.in
9. Indian Council of Agricultural Research. www.icar.org.in
10. Ministry of Environment & Forest. www.envfor.nic.in/funding

Apart from the above universities, other institutions are granted the permission to autonomously award degrees. These institutes do not affiliate colleges and are not officially called “universities” but “autonomous organizations” or “autonomous institutes”. They fall under the administrative control of the Department of Higher Education. These organizations include the Indian Institutes of Technology, the National Institutes of Technology, the Indian Institutes of Science Education and Research, the Indian Institutes of Engineering Science and Technology, the Indian Institutes of Management (though these award diplomas, not degrees), the National Law Schools, the All India Institute of Medical Sciences, and other autonomous institutes.

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National Testing Agency (NTA)

National Testing Agency (**NTA**) is an Indian government agency that has been approved by the Union Council of Ministers and established in November 2017 to conduct entrance examinations for higher educational institutions. The government appointed Vineet Joshi as the first Director-General of the agency. NTA is responsible for conducting the Joint Entrance Examination – Main (JEE Main), National Eligibility cum Entrance Test-Undergraduate (NEET UG), National Eligibility Test (NET), Common Management Admission Test (CMAT) and Graduate Pharmacy Aptitude Test (GPAT).

Constitutional provisions about education

Section	Nature	Description
15	Right	Prohibition of discrimination.
21/A	Right	Free and compulsory education for 6-14 years kids
30/1	Right	Minority educational institutions.
51h	Duty	Develop scientific temper, humanism, spirit of inquiry and reform
51A(K)	Duty	Parent/guardian provide education to their 6-14 years kids.
45	DPSP	State shall give early childhood care and education for all kids up to 6 year.
46	DPSP	State to look after Educational and economic interests of SC, ST,OBC. 1. SC=15% 2. ST=7.5% 3. OBC=27% These % apply to central (not state) educational institutions. In state educational Institutes, reservation depends on population. E.g. Punjab has no ST reservation. Tamilnadu only 1% ST reservation..
86th	Amendment	1. 86th Constitutional amendment 2002 2. It inserts 21/A= kids have right to education. 3. It inserts 51A(k)=adults have duty to provide education to their kids. .
93rd	Amendment	1. 93rd Constitutional amendment act 2005 2. It amended art 15 (Fundamental Right) to provide reservation for SC,ST and OBC in private institutions. (including self-financed but excluding minority educational institutions.) 3. it nullified Supreme court's judgment in other case that State cannot impose reservation on private aided institutions. .

MCQ

1. India has the largest Higher Education System in the World after :
(a) The United States of America
(b) Australia
(c) China

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(d) United Kingdom (U.K.)
Select the correct answer from the code given below :
(1) (a), (b), (c) and (d)
(2) (a), (b) and (c) only
(3) (a), (c) and (d) only
(4) (a) and (c) only
Answer: 2

2. Prime Minister Research Fellowship is for students pursuing Ph.D programme in :
(1) State and Central Universities
(2) Central Universities, IISc, IITs, NITs, IISERs and IIITs
(3) IISc, IITs, NITs, IISERs, IIITs, State and Central Universities
(4) IITs and IISc
Answer: 3

3. Which of the following statements are correct about gender budgeting ?
(a) It is a separate budget addressing the speci□c needs of women.
(b) It assesses the impact of government budget on women.
(c) It is an accounting exercise.
(d) It is another budgeting innovation.
Select the correct answer from the code given below :
(1) (b) and (d) only
(2) (a) and (d) only
(3) (a), (c) and (d) only
(4) (b), (c) and (d) only
Answer: 1

4. Which of the following are the barriers to citizen-centric administration in India ?
(a) Wooden and inflexible attitude of the civil servants
(b) Ineffective implementation of laws and rules
(c) Awareness of rights and duties of citizens
(d) Lack of job opportunities for the youth
Select the correct answer from the code given below :
(1) (a), (b), (c) and (d)
(2) (a), (b) and (c) only
(3) (a), (b) and (d) only
(4) (a) and (b) only
Answer: 1

5. Which of the following are the goals of higher education in India ?
(a) Access
(b) Equity
(c) Quality and Excellence
(d) Relevance
(e) Value based education
(f) Compulsory and free education
Select the correct answer from the code given below :
(1) (a), (b) and (e) only
(2) (a), (b), (e) and (f)
(3) (a), (b), (c), (d) and (e)
(4) (a), (b), (c), (d), (e) and (f)
Answer: 3

6. Which of the following has been ranked the best college in the country (2017) as per the National Institutional Ranking Framework (NIRF) ?

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(1) Miranda House, Delhi
(2) St. Stephen's College, Delhi
(3) Fergusson College, Pune
(4) Maharaja's College, Mysore
Answer: 1

7. Which of the following universities has received the Visitor's Award for the best Central University in India in Feb. 2017 ?
(1) Jawaharlal Nehru University
(2) Banaras Hindu University
(3) Tezpur University
(4) University of Hyderabad
Answer: 1

8. Who among the following can be removed by the President without Parliament's resolution ?
(1) Judge of a High Court
(2) Governor of a State
(3) Chief Election Commissioner
(4) Comptroller and Auditor – General
Answer: 2

9. Which of the following come(s) within the ambit of the term 'corruption' ?
(a) Misuse of official position
(b) Deviation from rules, laws and norms
(c) Non-action when action is required
(d) Harm to public good
Select the correct answer from the code given below :
(1) (a) only
(2) (a) and (b) only
(3) (a), (b) and (d)
(4) (a), (b), (c) and (d)
Answer: 4

10. Which of the following are the demerits of globalisation of higher education ?
(a) Exposure to global curriculum
(b) Promotion of elitism in education
(c) Commoditization of higher education
(d) Increase in the cost of education
Select the correct answer from the codes given below :
Codes :
(1) (a) and (d)
(2) (a), (c) and (d)
(3) (b), (c) and (d)
(4) (a), (b), (c) and (d)
Answer: 3

11. Which of the following statements are correct about deemed universities ?
(a) The Governor of the State is the chancellor of deemed universities.
(b) They can design their own syllabus and course work.
(c) They can frame their own guidelines regarding admission and fees.
(d) They can grant degrees.
Select the correct answer from the codes given below :
Codes :
(1) (a), (b) and (c)
(2) (b), (c) and (d)

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(3) (a), (c) and (d)
(4) (a), (b), (c) and (d)
Answer: 2

12. The purpose of value education is best served by focussing on
(1) Cultural practices prevailing in the society.
(2) Norms of conduct laid down by a social group.
(3) Concern for human values.
(4) Religious and moral practices and instructions
Answer: 3

13. Which of the following statements are correct ?
(a) Rajya Sabha is a permanent House which can be dissolved only during national emergency.
(b) Rajya Sabha does not represent the local interests of the States.
(c) Members of the Rajya Sabha are not bound to vote at the dictates of the states they represent.
(d) No Union territory has a representative in the Rajya Sabha.
Select the correct answer from the codes given below :
Codes :
(1) (a) and (d)
(2) (b) and (c)
(3) (b), (c) and (d)
(4) (a), (b), (c) and (d)
Answer: 2

14. Which of the following are not necessarily the immediate consequences of the proclamation of the President's Rule in a State ?
(a) Dissolution of the State Assembly.
(b) Removal of the Council of Ministers in the State.
(c) Takeover of the State administration by the Union Government.
(d) Appointment of a new Chief Secretary.
Select the correct answer from the codes given below :
Codes :
(1) (a) andü (d)
(2) (a), (b) and (c)
(3) (a), (b), (c) and (d)
(4) (b) and (c)
Answer: 1

15. Instead of holding the o_ce during the pleasure of the President who among the following hold(s) office during good behaviour ?
(a) Governor of a State (b) Attorney General of India
(c) Judges of the High Court (d) Administrator of a Union Territory
Select the correct answer from the codes given below :
Codes :
(1) (a) only
(2) (c) only
(3) (a) and (c)
(4) (a), (b), (c) and (d)
Answer: 2

16. Which of the following set of statements represents acceptable propositions in respect of teaching-learning relationships ? Choose the correct code to indicate your answer.
(i) When students fail in a test, it is the teacher who fails.
(ii) Every teaching must aim at ensuring learning.
(iii) There can be teaching without learning taking place.

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(iv) There can be no learning without teaching.
(v) A teacher teaches but learns also.
(vi) Real learning implies rote learning.
Codes :
(1) (ii), (iii), (iv) and (v)
(2) (i), (ii), (iii) and (v)
(3) (iii), (iv), (v) and (vi)
(4) (i), (ii), (v) and (vi)
Answer: 2

17. Which of the following core values among the institutions of higher education are promoted by the NAAC (National Assessment and Accreditation Council) ?
(a) Contributing to national development.
(b) Fostering global competencies among the students.
(c) Inculcating a value system among students and teachers.
(d) Promoting the optimum utilization of the infrastructure.
Select the correct answer from the codes given below:
(1) (b),(c)and(d)
(2) (a),(b)and(c)
(3) (a),(c)and(d)
(4) (a), (b), (c) and (d)
Answer: 2

18. The best way for providing value education is through?
(1) discussions on scriptural texts
(2) lectures/discourses on values
(3) seminars / symposia on values
(4) mentoring / reflective sessions on values
Answer: 4

19. The National Judicial Appointments Commission (NJAC) has been declared unconstitutional by
1) The Supreme Court of India
(2) The High Court
(3) The High Court and the Supreme Court both
(4) The President of India
Answer: 1

20. Which of the following statements about the Indian political system is/are correct ?
(a) The President is both Head of the State and Head of the Government
(b) Parliament is Supreme.
(c) The Supreme Court is the guardian of the Constitution.
(d) The Directive Principles of State Policy are justiciable.
Select the correct answer from the codes given below :
(1) (a),(b),(c) and (d) (2) (b), (c) and (d) (3) (b) and (c) 4) (c)only
Answer: 4

21. Which of the following are the fundamental duties ?
(a) To respect the National Flag.
(b) To protect and improve the natural environment.
(c) For a parent to provide opportunities for education/to his/her child.
(d) To protect monuments and places of national importance.
Select the correct answer from the codes given:
(1) (a),(b)and(c)
(2) (a), (b) and (d)
(3) (a),(c)and(d)

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(4) (a), (b),(c) and (d)
Answer: 1

22. Which of the following statements are correct in respect of Niti Aayog?
(a) It is a constitutional body.
(b) It is a statutory body.
(c) It is neither a constitutional body nor a statutory body.
(d) It is a think-tank.
Select the correct answer from the codes given below :
(1) (a)and(d)
(2) (b)and(d)
(3) (c)and(d)
(4) (b), (c) and (d)
Answer: 3

23. A college level assistant professor has planned his/her lectures with an intent to develop cognitive dimensions of students centered on skills of analysis and synthesis. Below, given are two sets of items Set – I consisting of levels of cognitive interchange and Set ~ II comprising basic requirements for promoting them. Match the two sets and indicate your answer by choosing the correct alternative from the code:

Set-I (Levels of Cognitive interchange)	Set-II (Basic requirements for promoting cognitive Interchange)
a. Memory level	i. Giving opportunity for discriminating examples and non-examples of a point.
b. Understanding level	ii. Recording the important points made during the presentations.
c. Reflective level	iii. Asking the students to discuss various items of information.
	iv. Critically analyzing the points to be made and discussed.

Codes:
a b c
(1) ii iv i
(2) iii iv ii
(3) ii i iv
(4) i ii ii
Answer: 3

24. Which set of learner characteristics may be considered helpful in designing effective teaching-learning systems ? Select the correct alternative from the codes given below :
(i) Prior experience of learners in respect of the subject.
(ii) Interpersonal relationships of learner's family friends.
(iii) Ability of the learners in respect of the subject.
(iv) Student's language background.
(v) Interest of students in following the prescribed dress code.
(vi) Motivational-orientation of the students.
Codes:
(1) (i), (ii), (iii) and (iv)
(2) (i), (iii), (iv) and (vi)
(3) (ii),(iii),(iv)and(v)
(4) (iii), (iv), (v) and (vi)
Answer: 2

25. Which of the following are the objectives of Kashtriya Uchchatar Shiksha Abhivan (RUSA) ?
(a) To improve the overall quality of state institutions.
(b) lo ensure adequate availability of quality faculty.
(c) To create new institutions through upgradation of existing autonomous colleges.
(d) To downgrade universities with poor infrastructure into autonomous colleges.
Select the correct answer from the codes given below :
(1) (a), (b), (c) and (d) (2) (a), (b) and (c)

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(3) (a), (c) and (d) (4) (a), (b) and (d)
Answer : 2

26. The grounds on which discrimination in admission to educational institutions is constitutionally prohibited are :
(a) Religion
(b) Sex
(c) Place of birth
(d) Nationality
Select the correct answer from the codes given below :
(1) (b), (c) and (d)
(2) (a), (b) and (c)
(3) (a), (b) and (d)
(4) (a), (b), (c) and (d)
Answer : 2

27. Which of the following statements are correct about Lok Sabha ?
(a) The Constitution puts a limit on the size of the Lok Sabha.
(b) The size and shape of the Parliamentary Constituencies is determined by the Election Commission.
(c) First – past – the Post electoral system is followed.
(d) The Speaker of Lok Sabha does not have a casting vote in case of an equality of votes.
Select the correct answer from the codes given below :
(1) (a) and (c)
(2) (a), (b) and (c)
(3) (a), (c) and (d)
(4) (a), (b); (c) and (d)
Answer : 1

28. Public Order as an item in the Constitution figures in :
(1) the Union List 2) the State List
(3) the Concurrent List (4) the Residuary Powers
Answer: 3

29. The term of office of the Advocate General of a State is :
(1) 4 years
(2) 5 years
(3) 6 years or 65 years of age whichever is earlier
(4) not fixed
Answer : 4

30. Which among the following States has the highest number of seats in the Lok Sabha ?
(1) Maharashtra (2) Rajasthan (3) Tamil Nadu (4) West Bengal
Answer : 1

31. The session of the parliament is summoned by :
(1) The President
(2) The Prime Minister
(3) The Speaker of the Lok Sabha
(4) The Speaker of the Lok Sabha and the Chairman of the Rajya Sabha
Answer : 1

32. Civil Service Day is celebrated in India on :
(1) 21st April2) 24th April (3) 21st June (4) 7th July
Answer : 1

33. The South Asia University is situated in the city of :

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(1) Colombo (2) Dhaka(3) New Delhi (4) Kathmandu
Answer : 3

34. The University Grants Commission was established with which of the following aims ?
(a) Promotion of research and development in higher education
(b) Identifying and sustaining institutions of potential learning
(c) Capacity building of teachers
(d) Providing autonomy to each and every higher educational institution in India
Select the correct answer from the codes given below :
(1) (a), (b), (c) and (d)
(2) (a), (b) and (c)
(3) (b), (c) and (d)
(4) (a), (b) and (d)
Answer : 2

35. The Gross Enrolment Ratio (GER) in institutions of higher education in India at present (2015) is about:
(1) 8 percent (2) 12 percent (3) 19 percent (4) 23 percent
Answer : 3

36. The total number of central universities in India in April 2015 was :
(1) 08 (2) 14 (3) 27 (4) 43
Answer : 4

37. The maximum number of fake institutions / universities as identi_ed by the UGC in the year 2014 are in the State / Union territory of
(A) Bihar B) Uttar Pradesh (C) Tamil Nadu (D) Delhi
Answer : B

38. Which of the following institutions are empowered to confer or grant degrees under the UGC Act, 1956 ?
1. A university established by an Act of Parliament.
2. A university established by an Act of Legislature.
3. A university / institution established by a linguistic minority.
4. An institution which is a deemed to be university.
Select the correct answer from the codes given below :
(A) 1 and 2 (B) 1,2 and 3
(C) 1.2 and 4 (D) 1, 2, 3 and 4
Answer : A

39. Which of the following are the tools of good governance ?
1. Social Audit
2. Separation of Powers 3. Citizen’s Charter
4. Right to Information
Select the correct answer from the codes given below :
(A) 1,3 and 4 (B) 2. 3 and 4
(C) l and 4 (D) 1,2. 3 and 4
Answer : D

40. Right to Privacy as a Fundamental Right is implied in
(A) Right to Freedom
(B) Right to Life and Personal Liberty (C) Right to Equality
(D) Right against Exploitation
Answer : B

41. Which of the following organizations deals with capacity building Educational Planning ?
(A) NCERT

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(B) UGC
(C) NAAC
(D) NUEPA
Answer : A

42. Which of the following powers, the President has in relation to Lok Sabha ?
1. Summoning
2. Adjournment – sine die
3. Prorogation
4. Dissolution
Select the correct answer from the codes given below :
(A) 1 and 4
(B) 1.2 and 3
(C) 1, 3 and 4
(D) 1,2, 3 and 4
Answer : C

43. The interval between two sessions of parliament must not exceed
(A) 3 months
(B) 6 months
(C) 4 months
(D) 100 days
Answer : B

44. Which of the following are Central Universities ?
1. Pondicherry University
2. Vishwa Bharati
3. H.N.B. Garhwal University
4. Kurukshetra University
Select the correct answer from the code given below :
Codes :
(A) 1,2 and 3
(B) 1,3 and 4
(C) 2, 3 and 4
(D) 1,2 and 4
Answer : A

45. Consider the following statements and select the correct answer from the code given below :
i. Rajasthan receives the highest solar radiation in the country.
ii. India has the □fth largest installed wind power in the world.
iii. The maximum amount of wind power is contributed by TamilNadu.
iv. The primary source of uranium in India is Jaduguda.
Codes:
(A) i and ii
(B) i, ii and iii
(C) ii and iii
(D) i and iv
Answer : D

46. Who among the following is the defacto executive head of the Planning Commission ?
(A) Chairman
(B)Deputy Chairman
(C) Minister of State for Planning
(D) Member Secretary
Answer : B

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47. Education as a subject of legislation □gures in the
(A) Union List
(B) State List
(C) Concurrent List
(D) Residuary Powers
Answer : C

48. Consider the statement which is followed by two arguments (i) and (ii).
Statement : India should have a very strong and powerful Lokpal.
Arguments : (i) Yes, it will go a long in eliminating corruption in bureaucracy.
(ii) No, it will discourage honest o□cers from making quick decisions.
Codes:
(A) Only argument (i) is strong.
(B) Only argument (ii) is strong.
(C) Both the arguments are strong.
(D) Neither of the arguments is strong.
Answer : A

49. Which of the following universities has adopted the meta university concept ?
(A) Assam University
(B) Delhi University
(C) Hyderabad University
(D) Pondicherry University
Answer : B

50. Which of the following statements are correct about a Central University ?
1. Central University is established under an Act of Parliament.
2. The President of India acts as the visitor of the University.
3. The President has the power to nominate some members to the Executive Committee or the Board of Management of the University.
4. The President occasionally presides over the meetings of the Executive Committee or Court.
Select the correct answer from the code given below:
Codes :
(A) 1,2 and 4
(B) 1,3 and 4
(C) 1,2 and3
(D) 1,2, 3 and 4
Answer : C

51. The e-content generation for under–graduate courses has been assigned by the Ministry of Human Resource Development to
(A) INFLIBNET
(B) Consortium for Educational Communication
(C) National Knowledge Commission
(D) Indira Gandhi National Open University
Answer-B

52. Which one of the following Councils has been disbanded in 2013?
(A) Distance Education Council (DEC)
(B) National Council for Teacher Education (NCTE)
(C) National Council of Educational Research and Training (NCERT)
(D) National Assessment and Accreditation Council (NAAC)
Answer : A

53. Which of the following statements are correct about the National Assessment and Accreditation Council?

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1. It is an autonomous institution.
2. It is tasked with the responsibility of assessing and accrediting institutions of higher education.
3. It is located in Delhi.
4. It has regional offices.
Select the correct answer from the codes given below:
Codes :
(A) l and 3 (B) l and 2
(C) l,2 and 4 (D) 2,3 and 4
Answer : A

54. The power of the Supreme Court of India to decide disputes between two or more States falls under its
(A) Advisory Jurisdiction
(B) Appellate Jurisdiction
(C) Original Jurisdiction
(D)Writ Jurisdiction
Answer : C

55. Which of the following statements are correct?
1. There are seven Union Territories in India.
2. Two Union Territories have Legislative Assemblies
3. One Union Territory has a High Court.
4. One Union Territory is the capital of two States.
Select the correct answer from the codes given below:
(A) 1 and 3 only (B) 2 and 4 only (C) 2, 3 and 4 only (D) 1, 2, 3 and 4
Answer : D

56. Which of the following statements are correct about the Central Information Commission?
1. The Central Information Commission is a statutory body.
2. The Chief Information Commissioner and other Information Commissioners are appointed by the President of India.
3. The Commission can impose a penalty upto a maximum of Rs 25,000/-
4. It can punish an errant officer.
Select the correct answer from the codes given below :
Codes:
(A) 1 and 2 only
(B) 1,2 and 4
(C) 1,2 and 3
(D) 2, 3 and 4
Answer : C

57. Who among the following conducted the CNN-IBN – The Hindu 2013 Election Tracker Survey across 267 constituencies in 18 States?
(A) The Centre for the Study of Developing Societies (CSDS)
(B) The Association for Democratic Reforms (ADR)
(C) CNN and IBN
(D) CNN, IBN and The Hindu
Answer : A

58. In which of the following categories the enrollment of students in higher in 2010 – 11 was beyond the percentage Of seats reserved ?
(A) OBC students
(B) SC students
(C) ST students
(D) Woman students
Answer : A

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59. Which one of the following statements is not correct about the University Grants Commission (UGC)?
(A) It was established in 1956~by an Act of Parliament.
(B) It is tasked with promoting and coordinating higher education.
(C) It receives Plan and Non-Plan funds from the Central Government.
(D) It receives funds from State Governments in respect of State Universities
Answer : D

60. Consider the statement which is followed by two arguments (I) and (II)
Statement: Should India switch over to a two party system?
Arguments:
(I) Yes, it will lead to stability of Government.
(II) No, it will limit the choice of voters.

(A) Only argument (I) is strong.
(B) Only argument (II) is strong;
(C) Both the arguments are strong.
(D) Neither of the arguments is strong.
Answer : C

61. Consider the statement which is followed by two arguments (I) and (II):
Statement: Should persons with criminal background be banned from contesting elections?
Arguments: (I) Yes, it will decriminalise politics.
(II) No, it will encourage the ruling party to _le frivolous cases against their political opponents.
(A) Only argument (I) is strong.
(B) Only argument (II) is strong.
(C) Both the arguments are strong.
(D) Neither of the arguments is strong.
Answer : A

62. Which of the following statement(s) is/are correct about a Judge of the Supreme Court of India?
1. A Judge of the Supreme Court is appointed by the President of India.
2. He holds office during the pleasure of the President.
3. He can be suspended, pending an inquiry.
4. He can be removed for proven misbehaviour or incapacity.
Select the correct answer from the codes given below:
Codes :
(A) 1,2and3 (B) 1,3and4
(C) 1 and 3 (D) 1 and 4
Answer : D

63. In the warrant of precedence, the Speaker of the Lok Sabha comes next only to
(A) The President
(B) The Vice-President
(C) The Prime Minister
(D) The Cabinet Ministers
Answer : C

64. Which of the following is not a measure of Human Development Index ?
(A) Literacy Rate
(B) Gross Enrolment
(C) Sex Ratio
(D) Life Expectancy
Answer : C

65. India has the highest number of students in colleges after

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(A) U.K. (B) U.S.A. (C) Australia (D) Canada
Answer : B

66. Which of the following statement(s) is/are not correct about the Attorney General of India ?
1. The President appoints a person, who is quali□ed to be a Judge of a High Court, to be the Attorney General of India.
2. He has the right of audience in all the Courts of the country.
3. He has the right to take part in the proceedings of the Lok Sabha and the Rajya Sabha.
4. He has a fixed tenure.
Select the correct answer from the codes given below :
Codes :
(A) l and 4 (B) 2, 3 and 4
(C) 3 and 4 (D) 3 only
Answer : A

67. Which of the following prefix President Pranab Mukherjee desires to be discontinued while interacting with Indian dignitaries as well as in official notings ?
1. His Excellency 2. Mahamahim
3. Hon'ble 4. Shri/Smt.
Select the correct answer from the codes given below :
Codes :
(A) 1 and 3 (B) 2 and 3
(C) l and 2 (D) 1,2 and 3
Answer : C

68. Which of the following can be done under conditions of □nancial emergency ?
1. State Legislative Assemblies can be abolished.
2. Central Government can acquire control over the budget and expenditure of States.
3. Salaries of the Judges of the High Courts and the Supreme Court can be reduced.
4. Right to Constitutional Remedies can be suspended.
Select the correct answer from the codes given below :
Codes :
(A) 1,2 and 3 (B) 2, 3 and 4
(C) l and2 (D) 2 and 3
Answer : D

69. Match List – I with List – II and select the correct answer from the codes given below :

List-I	List -II
(a) Poverty Reduction Programme	(i) Mid-day Meals
(b) Human Development Scheme	(ii) Indira Awas Yojana (IAY)
(c) Social Assistance Scheme	(iii) National Old Age Pension (NOAP)
(d) Minimum Need Scheme	(iv) MNREGA

Codes :
(a) (b) (c) (d)
(A) (iv) (i) (iii) (ii)
(B) (ii) (iii) (iv) (i)
(C) (iii) (iv) (i) (ii)
(D) (iv) (iii) (ii) (i)
Answer : A

70. Indian Institute of Advanced Study is located at
(A) Dharmshala
(B) Shimla
(C) Solan
(D) Chandigarh

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Answer : B

71. Indicate the number of Regional Offices of National Council of Teacher Education.
(A) 04
(B) 05
(C) 06
(D) 08
Answer : A

72. Which of the following rights was considered the “Heart and Soul” of the Indian Constitution by Dr. B.R. Ambedkar ?
(A) Freedom of Speech
(B) Right to Equality
(C) Right to Freedom of Religion
(D) Right to Constitutional Remedies
Answer : D

73. Who among the following created the o□ce of the District Collector in India ?
(A) Lord Cornwallis
(B) Warren Hastings
(C) The Royal Commission on Decentralisation
(D) Sir Charles Metcalfe
Answer : A

74. The Fundamental Duties of a citizen include
1. Respect for the Constitution, the National Flag and the National Anthem
2. To develop the scienti□c temper.
3. Respect for the Government.
4. To protect Wildlife.
Choose the correct answer from the codes given below : Codes :
(A) 1, 2 and 3
(B) 1, 2 and 4
(C) 2, 3 and 4
(D) 1, 3, 4 and 2
Answer : B

75. The President of India takes oath
(A) to uphold the sovereignty and integrity of India.
(B) to bear true faith and allegiance to the Constitution of India.
(C) to uphold the Constitution and Laws of the country.
(D) to preserve, protect and defend the Constitution and the law of the country
Answer : D

76. The aim of value education to inculcate in students is
(A) the moral values
(B) the social values
(C) the political values
(D) the economic values
Answer : A

77. Indicate the number of Regional O_ces of University Grants Commission of India.
(A) 10 (B) 07(C) 08 (D) 09
Answer : B

78. One-rupee currency note in India bears the signature of

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(A) The President of India
(B) Finance Minister of India
(C) Governor, Reserve Bank of India
(D) Finance Secretary of Government of India
Answer : D

79. Match the List – I with the List – II and select the correct answer from the codes given below :

List – I (Commissions and Committees)	List – II (Year)
(a) First Administrative Reforms Commission	(i) 2005
(b) Paul H. Appleby Committee I	(ii) 1962
(c) K. Santhanam Committee	(iii) 1966
(d) Second Administrative Reforms Commission	(iv) 1953

Codes :

(a)	(b)	(c)	(d)
(A) (i)	(iii)	(ii)	(iv)
(B) (iii)	(iv)	(ii)	(i)
(C) (iv)	(ii)	(iii)	(i)
(D) (ii)	(i)	(iv)	(iii)

Answer : B

80. Constitutionally the registration and recognition of political parties is the function performed by
(A) The State Election Commission of respective States
(B) The Law Ministry of Government of India
(C) The Election Commission of India
(D) Election Department of the State Governments
Answer : C

81. The members of Gram Sabha are
(A) Sarpanch, Upsarpanch and all elected Panchas
(B) Sarpanch, Upsarpanch and Village level worker
(C) Sarpanch, Gram Sevak and elected Panchas
(D) Registered voters of Village Panchayat
Answer : D

82. The first Open University in India was set up in the State
(A) Andhra Pradesh (B) Delhi (C) Himachal Pradesh (D) Tamil Nadu
Answer : A

83. Most of the Universities in India are funded by
(A) the Central Government
(B) the State Governments
(C) the University Grants Commission
(D) Private bodies and Individuals
Answer : C

84. Which of the following organizations looks after the quality of Technical and Management education in India?
(A) NCTE (B) MCI (C) AICTE (D) CSIR
Answer : C

85. Consider the following statements : Identify the statement which implies natural justice.
(A) The principle of natural justice is followed by the Courts.
(B) Justice delayed is justice denied.
(C) Natural justice is an inalienable right of a citizen

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(D) A reasonable opportunity of being heard must be given.
Answer : D

86. The President of India is
(A) the Head of State
(B) the Head of Government
(C) both Head of the State and the Head of the Government
(D) None of the above
Answer : A

87. Who among the following holds o□ce during the pleasure of the President of India?
(A) Chief Election Commissioner
(B) Comptroller and Auditor General of India
(C) Chairman of the Union Public Service Commission
(D) Governor of a State
Answer : D

88. India's □rst Defence University is in the State of
(A) Haryana B) Andhra Pradesh (C) Uttar Pradesh (D) Punjab
Answer : A

89. Most of the Universities in India
(A) conduct teaching and research only
(B) a□liate colleges and conduct examinations
(C) conduct teaching/research and examinations
(D) promote research only
Answer : C

90. Which one of the following is not a Constitutional Body ?
(A) Election Commission
(B) Finance Commission
(C) Union Public Service Commission
(D) Planning Commission
Answer : D

91. Which one of the following statements is not correct ?
(A) Indian Parliament is supreme.
(B) The Supreme Court of India has the power of judicial review.
(C) There is a division of powers between the Centre and the States.
(D) There is a Council of Ministers to aid and advise the President.
Answer : B

92. Which one of the following statements re□ects the republic character of Indian democracy ?
(A) Written Constitution
(B) No State religion
(C) Devolution of power to local Government institutions
(D)Elected President and directly or indirectly elected Parliament
Answer : D

93. Who among the following appointed by the Governor can be removed by only the President of India ?
(A) Chief Minister of a State
(B) A member of the State Public Service Commission
(C) Advocate-General
(D) Vice-Chancellor of a State University
Answer : B

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94. The accreditation process by National Assessment and Accreditation Council (NAAC) differs from that of National Board of Accreditation (NBA) in terms of
(A) Disciplines covered by both being the same, there is duplication of efforts.
(B) One has institutional grading approach and the other has programme grading approach.
(C) Once get accredited by NBA or NAAC, the institution is free from renewal of grading, which is not a progressive decision.
(D) This accreditation amounts to approval of minimum standards in the quality of education in the institution concerned.
Answer : B

95. Which option is not correct ?
(A) Most of the educational institutions of National repute in scientific and technical sphere fall under 64th entry of Union list.
(B) Education, in general, is the subject of concurrent list since 42nd Constitutional Amendment Act 1976.
(C) Central Advisory Board on Education (CABE) was first established in 1920.
(D) India had implemented the right to Free and Compulsory Primary Education in 2002 through 86th Constitutional Amendment
Answer : A

96. Which statement is not correct about the “National Education Day” of India ?
(A) It is celebrated on 5th September every year.
(B) It is celebrated on 11th November every year.
(C) It is celebrated in the memory of India’s first Union Minister of Education, Dr. Abul Kalam Azad.
(D) It is being celebrated since 2008
Answer : A

97. Match List-I with List-II and select the correct answer from the codes given below :

List – I (Articles of the Constitution)	List – II (Institutions)
(a) Article 280	(i) Administrative Tribunals
(b) Article 324	(ii) Election Commission of India
(c) Article 323	(iii) Finance Commission at Union level
(d) Article 315	(iv) Union Public Service Commission

Codes :

	(a)	(b)	(c)	(d)
(A)	(i)	(ii)	(iii)	(iv)
(B)	(iii)	(ii)	(i)	(iv
(C)	(ii)	(iii)	(iv)	(i)
(D)	(ii)	(iv)	(iii)	(i)

Answer : B

98. Deemed Universities declared by UGC under Section 3 of the UGC Act 1956, are not permitted to
(A) offer programmes in higher education and issue degrees.
(B) give a_liation to any institute of higher education.
(C) open off-campus and off-shore campus anywhere in the country and overseas respectively without the permission of the UGC.
(D) offer distance education programmes without the approval of the Distance Education Council.
Answer : C

99. The recommendation of National Knowledge Commission for the establishment of 1500 Universities is to
(A) create more teaching jobs
(B) ensure increase in student enrolment in higher education
(C) replace or substitute the privately managed higher education institutions by public institutions
(D) enable increased movement of students from rural areas to urban areas
Answer : B

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100. According to Article 120 of the Constitution of India, the business in Parliament shall be transacted in
(A) English only
(B) Hindi only
(C) English and Hindi both
(D) All the languages included in Eighth Schedule of the Constitution
Answer : C

101. Which of the following is more interactive and student centric ?
(A) Seminar (B) Workshop
(C) Lecture (D) Group Discussion
Answer : D

102. The Parliament in India is composed of
(A) Lok Sabha & Rajya Sabha
(B) Lok Sabha, Rajya Sabha & Vice President
(C) Lok Sabha, Rajya Sabha & President
(D) Lok Sabha, Rajya Sabha with their Secretariats
Answer : C

103. The enrolment in higher education in India is contributed both by Formal System of Education and by System of Distance Education. Distance education contributes
(A) 50% of formal system
(B) 25% of formal system
(C) 10% of the formal system
(D) Distance education system's contribution is not taken into account while considering the figures of enrolment in higher education
Answer : B

104. Assertion 6. (A) : The U.G.C. Academic Staff Colleges came into existence to improve the quality of teachers.
Reason (R) : University and college teachers have to undergo both orientation and refresher courses.
(A) Both (A) and (R) are true and (R) is the correct explanation.
(B) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(C) (A) is correct and (R) is false.
(D) (A) is false and (R) is correct.
Answer : A

105. The Kothari Commission's report was entitled on :
(A) Education and National Development
(B) Learning to be adventure
(C) Diversi_cation of Education
(D) Education and socialization in democracy
Answer : A

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